

Nathaniel Russell House

51 Meeting Street, Charleston, SC 29401

Interiors finishes report

November-December 2012



Figure 1: Nathaniel Russell House, 51 Meeting Street, Charleston, S.C. Photo by author.

Introduction

This report presents the results of microscopic analysis of samples taken from the two story hyphen at Nathaniel Russell House, 51 Meeting Street, Charleston, S.C. 29401. Finishes analysis was conducted by means of cross-sectional analysis; historic research into the possible paint campaigns was limited. Some documents were provided such as the December, 1996 cross-section microscopy report conducted by Susan Buck titled, *An Architectural and Historical Analysis of the Nathaniel Russell House Charleston, South Carolina Volume V, Cross-section microscopy paint study, Nathaniel Russell House* which was part of a larger Historic Structures Report, the service wing and support buildings section provided. Frances Henderson Ford, of Ford Restored carried out this project in November and December of 2012 for Historic Charleston Foundation, 40 East Bay Street, Charleston, SC 29401.

Methodology

This analysis of finishes in the two story hyphen area of the Nathaniel Russell House was intended to document and expand on the December, 1996 paint study conducted by conservator, Susan Buck before the partial demolition and renovation of this space in 2012/2013. The specific sample areas were chosen by the staff of Historic Charleston Foundation and illustrated below on 09/5/2012 floor plans drawn by the Glenn Keyes Architectural firm (figure 2: first floor, figure 3: second floor).

First floor samples taken in rooms:

107A, 107B, 107C and 108.

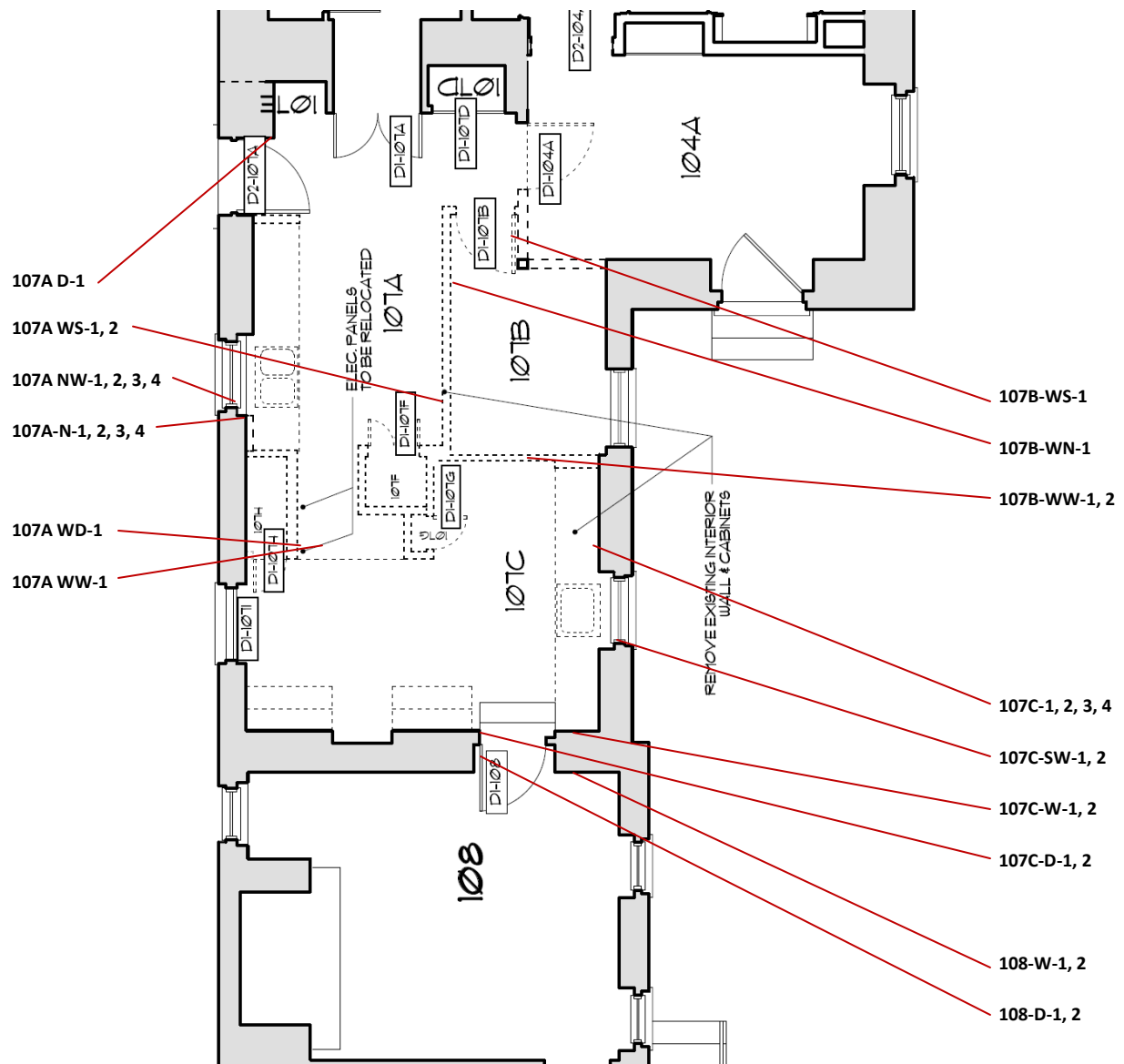


Figure 2: Sample area notations on first floor plans drawn by Glenn Keyes Architects.

207, 207A and 207B.

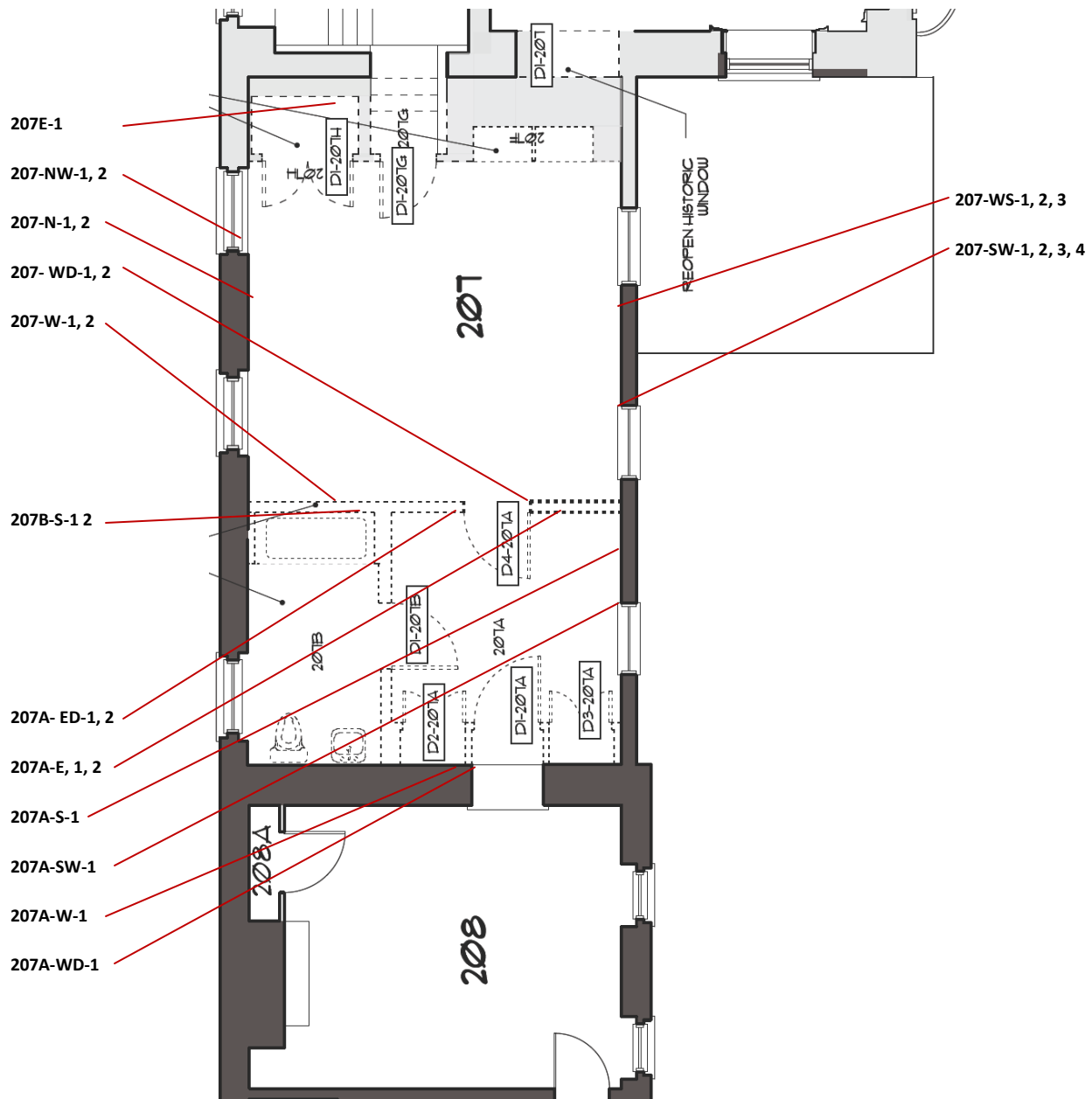


Figure 3: Sample area notations on second floor plans drawn by Glenn Keyes Architects.

The sample areas identified for this study were as follows:

First floor

1. North wall: 107A-N-1, 2, 3, 4
2. North window surround: 107A-NW-1, 2, 3, 4
3. Interior wall: both sides for comparison: 107A-WS-1, 2 and 107B-WN-1
Additional walls for comparison: 107C-W-1, 2 and 108-W-1, 2
4. Interior wall cornice: both sides for comparison: no cornice in this area
5. Interior wall door surround: both sides for comparison: 107C-D-1, 2 and 108-D-1, 2;
Additional door surround for comparison 107A WD-1 and 107A-D-1
6. South window surround: 107C-SW-1, 2
7. Additional samples: Interior wall room 107B: (south) 107B-WS-1, (west) 107B-WW-1, 2
Interior wall room 107A: (west) 107A-WW-1. Interior wall room 107C: (south) 107C-1, 2, 3, 4
and (west) 107C

Second floor

1. North wall: 207-N-1, 2.
2. North window surround: 207-NW-1, 2.
3. Interior wall: both sides for comparison 207W-1, 2/207A-E-1, 2.
4. Interior wall cornice: 207-C-1
5. Interior wall door surround: both sides for comparison: 207-WD-1, 2/207A-ED-1, 2.
6. Closet wall: 207-E-1
7. Interior wall door surround: 207A-WD-1
8. South wall: 207A-S-1 and 207-WS-1, 2, 3
9. South window surround: 207A-SW-1 and 207-SW-1, 2, 3, 4
10. Additional samples: West wall room 207A W-1 and east wall room 207B-S-1, 2

In order to analyze the finishes, representative samples were taken from each area. Some areas were adjusted after onsite inspection of surfaces and the desire to sample from original fabric. Samples of one sixteenth to three quarters inch were removed using a micro scalpel with a #15 blade. Areas were chosen which appeared to have original fabric and unaltered by paint prep such as sanding. Samples were put in polyethylene bags and transported to the conservation lab at 292 Meeting Street where they were examined and cast in polyester resin (Bio-Plastic®, Wards Natural Science, Rochester, New York) cubes. After setting, the cubes were cut into cross-section using a Buehler Isomet and polished on a Buehler Ecomet, mounted on to marked slides and examined in reflective visible and ultra violet light with a Nikon Eclipse 80i, at magnifications of 4, 10 and 20X.

All samples were examined and information recorded. Those samples which best illustrated the paint history of the particular location were then chosen for photomicroscopy. Samples were photographed using a CRAIC Technologies camera with Sony ICX625 Optical Interface in reflected visible light. CRAIC

Technologies Inc. imaging software was used for photo management. Cross sections can reveal the sequence of paint layers over time, thickness, dirt layers and texture. Paint colors shown in this report should not be used for color matching as they alter with color temperature, printing, scanning, etc.

Results of paint analysis

First Floor Rooms 107A, 107B, 107C

Room 107A: Wall samples were taken on the north, west and south walls, the original plaster found trapped behind the north wall cabinets. Period one, cream distemper paint continues into period two and three which is in contrast to the wooden window surround which finds a period one warm white and gray finish coat. The door surround on the west wall mimics the many generations of finishes found on the north wall.

Period one wall: Munsell 10YR 9.5/1 white

Period one window surround: Munsell N 9.25/ white

Period one door surround: Munsell 10YR 9.5/1 white

Room 107B: Wall samples were taken on the north, west and south walls which confirmed wall additions and only the west wall with paint layers corresponding to those found on the north wall of room 107A.

Period one wall: Munsell 10YR 9.5/1 white

107C: The chronology from the window surround samples in this room have clearly been disturbed due to aggressive paint prep. The color value of the gray period one finish here appears stronger but is most likely the same as found in room 107A. The wall samples were taken on the west and east wall for comparison to the east wall of room 108 (clearly an addition with only modern paints). Samples from the 107C walls show early creams which in later periods were tinted. Samples from the west door surround also show these early tinted creams; blue and green but only mid to modern layers line up with those from the walls.

Period one wall: Munsell 10YR 9.5/1 white

Period one window surround: Munsell N 9.25/ white

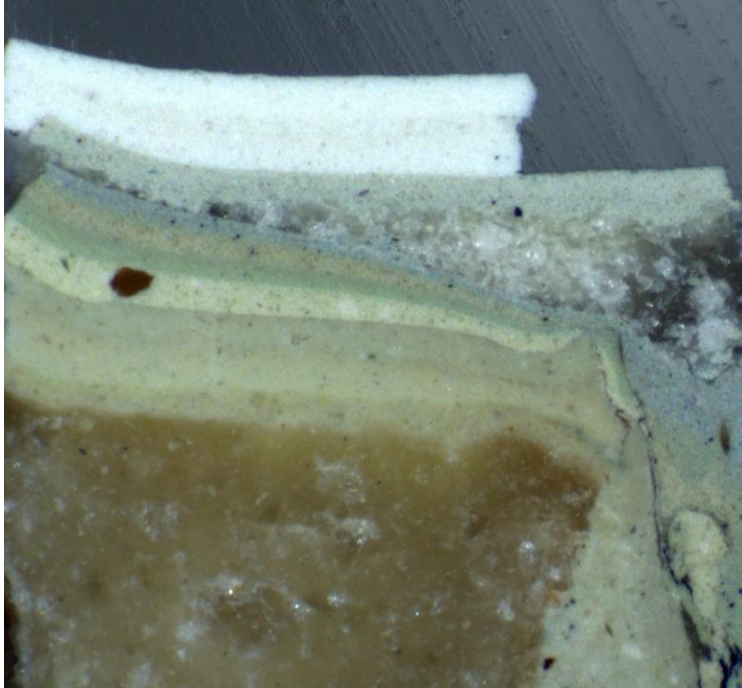
Period one door surround: Munsell N 9.25/ white

Stratigraphy Sheets

First floor

Nathaniel Russell House
Sample Location: 107A east kitchen
Detail: North wall
Sample #:107A-N-3

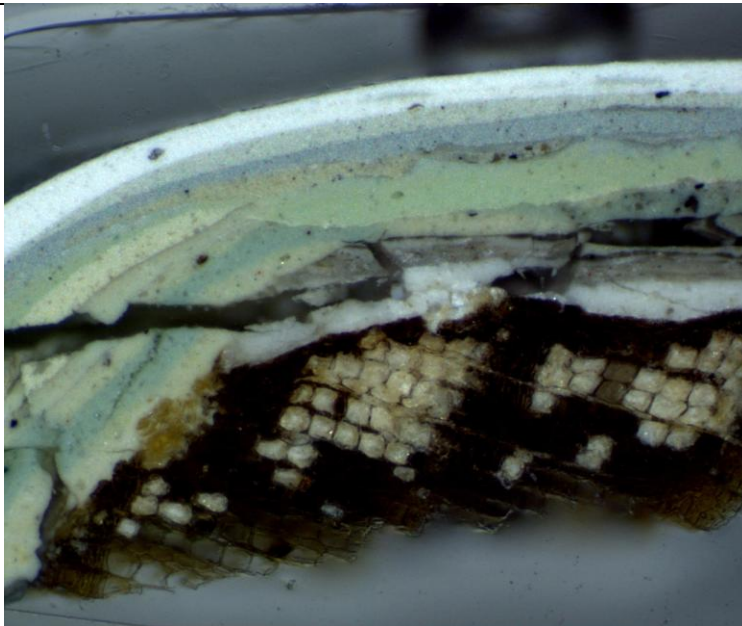
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This sample is the most representative of those taken from the north wall of room 107A (east kitchen). On plaster substrate are three generations of cream distemper paint with visible pigments. A middle period reveals a creamy yellow, pale green and blue wall finish before modern layers of warm white, creamy yellow, white primer and white paint.

Nathaniel Russell House
Sample Location: 107A east kitchen
Detail: North window surround
Sample #:107A-NW-3

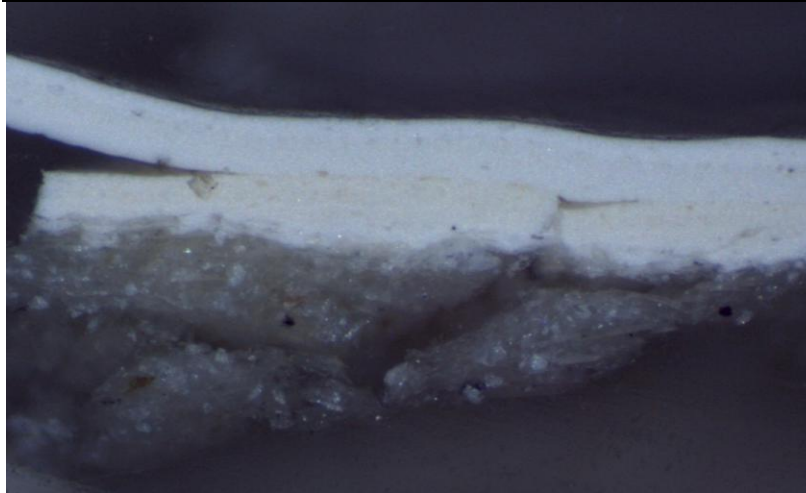
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This sample is most representative of those taken from the window surround on the north wall room 107A (east kitchen). On wood substrate is warm white primer and gray finish coat. The next campaign of creamy yellow lines up through modern finishes with that of the wall in this area.

Nathaniel Russell House
Sample Location: 107A east kitchen
Detail: south wall
Sample #: 107A-WS-2

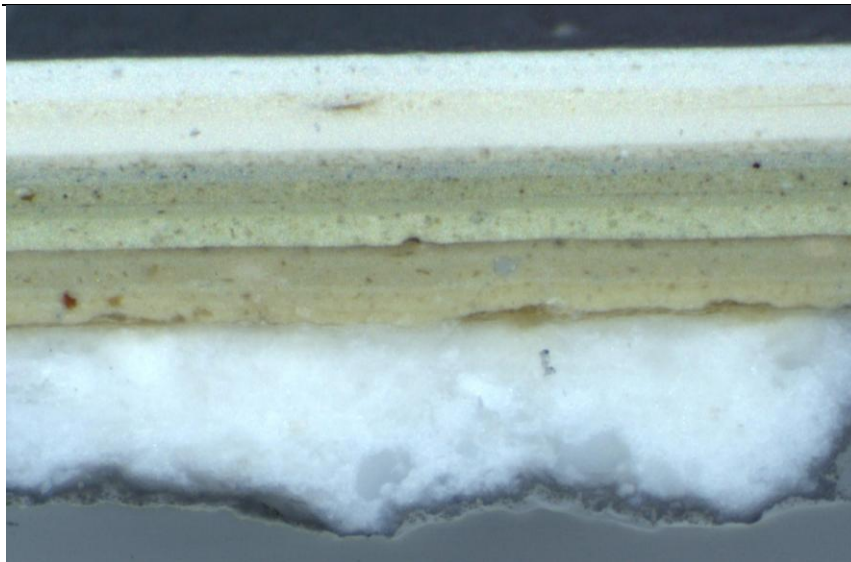
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This sample from the south wall of room 107A (east kitchen) confirms data from the 1996 Architectural Analysis that this partition wall was added by Historic Charleston Foundation at the time of its purchase of the Nathaniel Russell House, creating the small office on the south side. It contains only modern paint campaigns

Nathaniel Russell House
Sample Location: 107A east kitchen
Detail: west wall
Sample #:107A-WW-1

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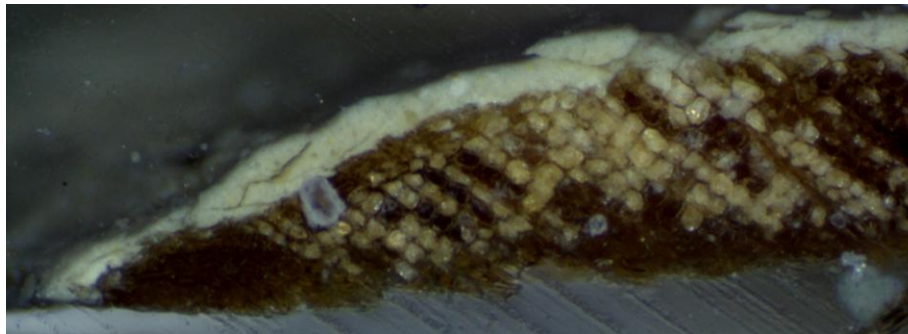
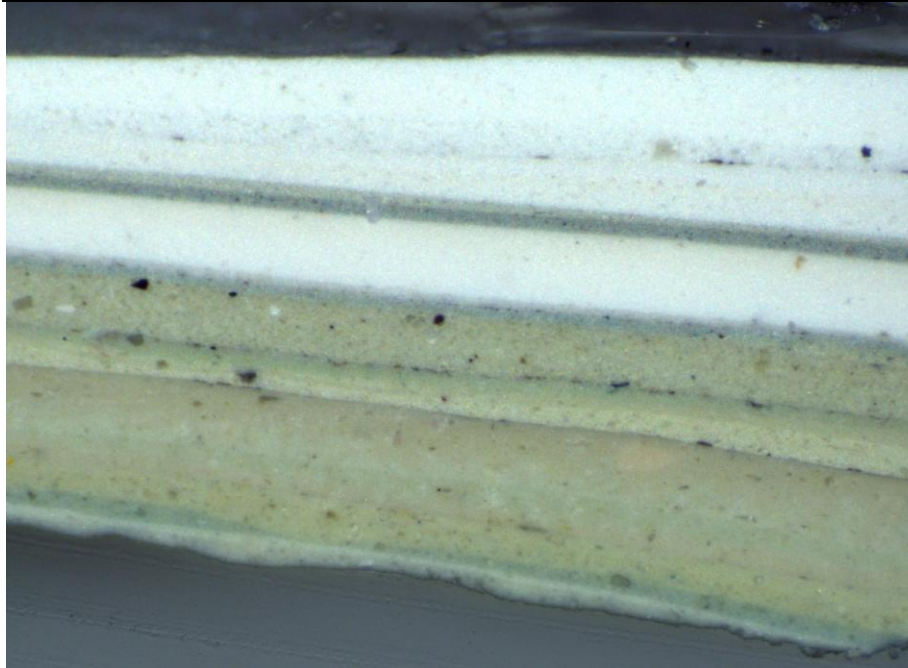


This sample from the west wall of room 107A (east kitchen) confirms the stratigraphy found on the north wall.

Early generations of cream distemper paint on plaster substrate with visible pigments (yellow, blue and white). A middle period of creamy yellow, pale green and blue wall finish before modern layers of warm white, creamy yellow, white primer and white paint.

Nathaniel Russell House
Sample Location: 107A east kitchen
Detail: west wall door surround
Sample #:107A WD-1

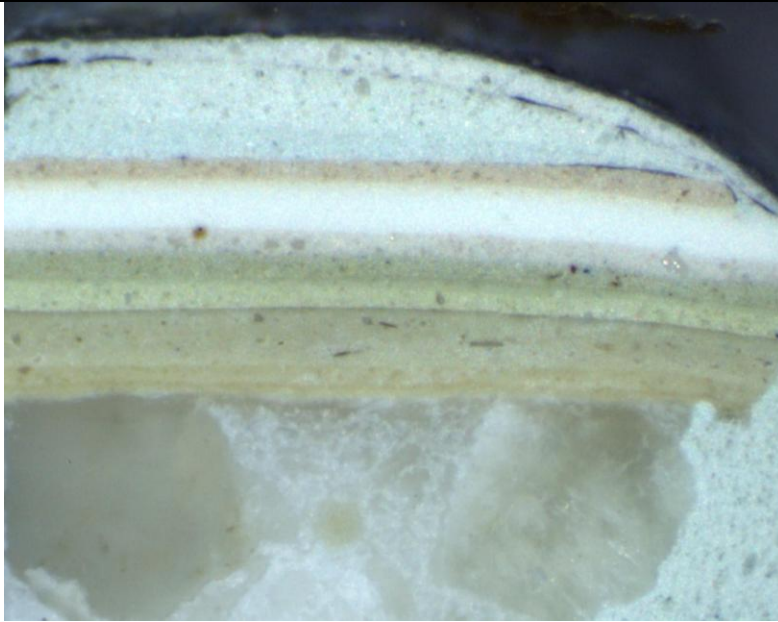
November/December 2012



This sample is most representative of those taken from the door surround on the west wall room 107A (east kitchen). The wood substrate is shown with original cream distemper paint, which, similar to wall samples was continued for three generations. Dirt lines are very evident in this sample to the point of making some layers appear darker. The middle period of finishes are consistent with earlier samples with only in more contemporary times an additional campaign of green and the omission of the modern yellow. The application of paint in this area was for some reason thicker, as evident in the modern white paint layers.

Nathaniel Russell House
Sample Location: 107B office
Detail: wall west
Sample #: 107B-WW-1

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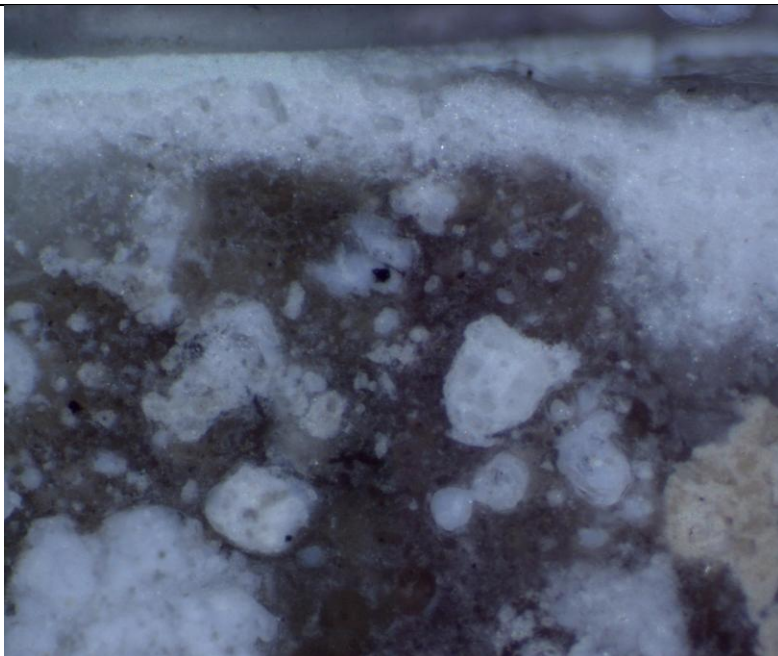


This sample from the west wall of room 107B (office) finds paint history prior to the creation of the 1955-56 office. First period creamy yellows, second period creamy green are followed by beige and warm white.

Fourth generation flesh on cream primer was followed with pale blue and pale green.

Nathaniel Russell House
Sample Location: 107B office
Detail: wall south
Sample #: 107B-WS-1

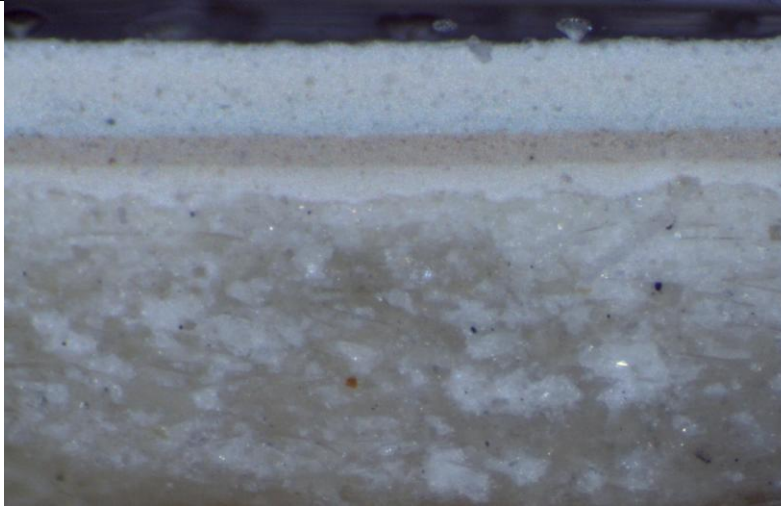
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This sample from the south wall near the doorway has disturbed layers due to repair or paint prep but modern finishes of flesh, white and pale green are evident. This wall must have been part of the 1955-56 office addition.

Nathaniel Russell House
Sample Location: 107B office
Detail: north wall
Sample #: 107B-WN-1

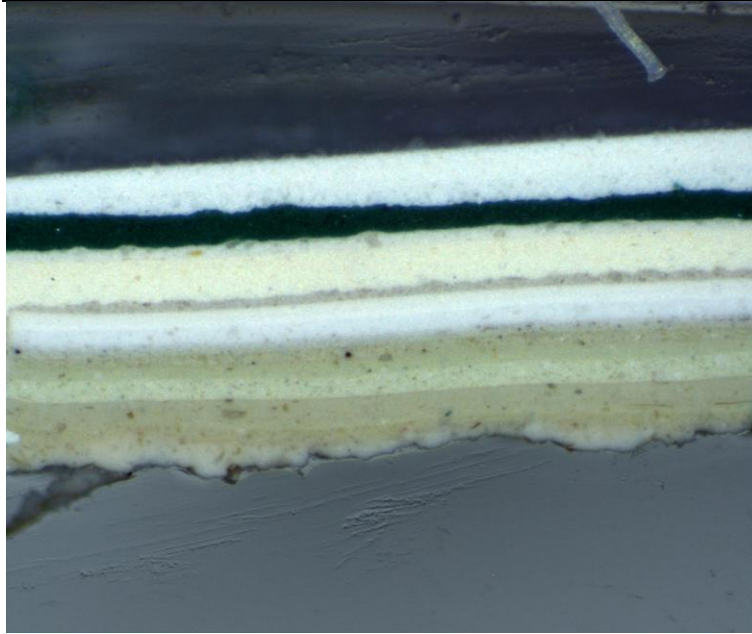
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This sample from the north wall of room 107B (office) confirms data from the 1996 Architectural Analysis that this partition wall was added by Historic Charleston Foundation at the time of its purchase of the Nathaniel Russell House to create the small office on the south side. It contains only modern paint campaigns which begin with a 1955-56 cream paint, followed by flesh, pale blue and creamy white.

Nathaniel Russell House
Sample Location: 107C west kitchen
Detail: south wall
Sample #: 107C-2

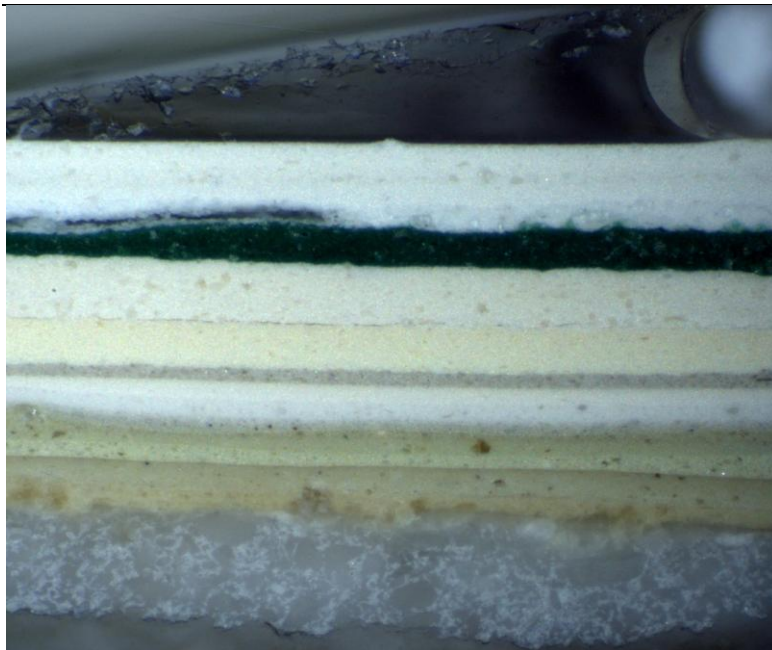
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This sample is most representative of those taken from the south wall, room 107C (west kitchen). On wood substrate is a first period cream primer and cream distemper paint, the second period being very similar with just more of a green hue. Tan, white, pale yellow and oatmeal layers follow with modern finishes consisting of pale yellow, dark green on white primer and cream primer and paint.

Nathaniel Russell House
Sample Location: 107C west kitchen
Detail: west wall
Sample #: 107C-W-1

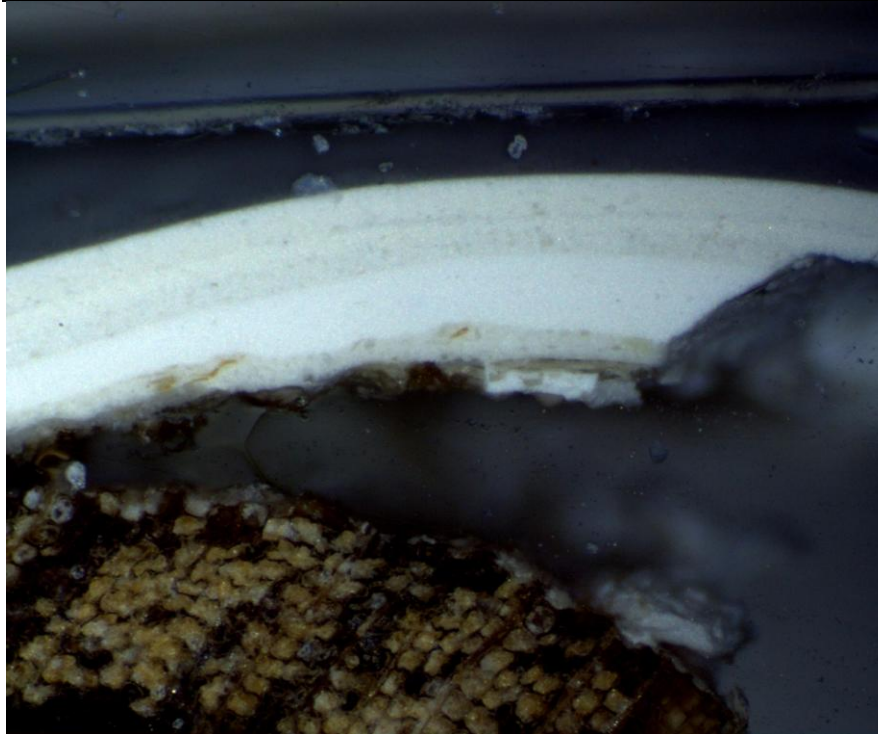
November/December 2012



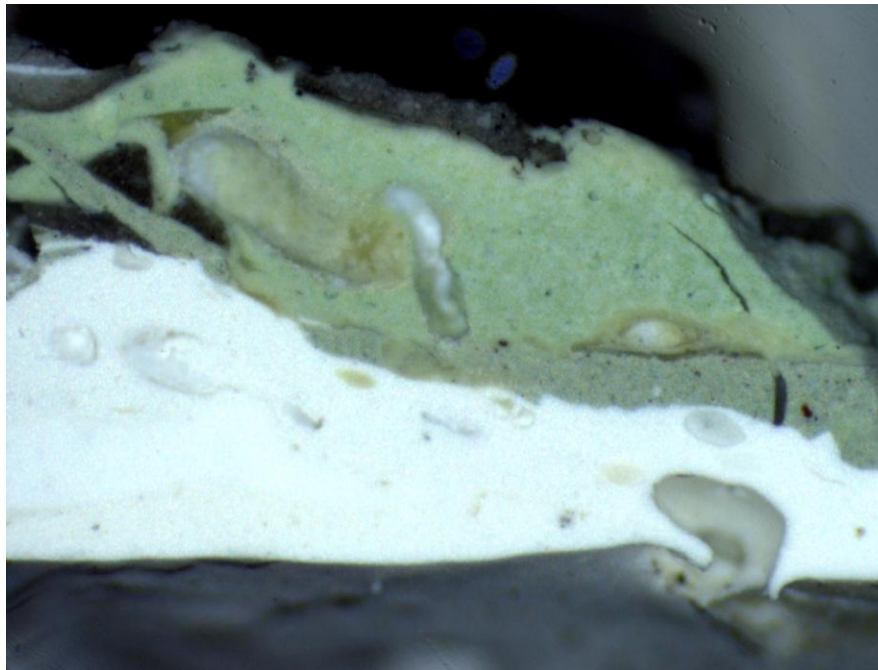
This sample is most representative of those taken from the west wall room 107C (west kitchen). The finish layers of this sample are identical to those found on the south wall (sample # 107-C-2, seen above).

Nathaniel Russell House
Sample Location: 107C west kitchen
Detail: south window surround
Sample #:107C-SW-1, 107C-SW-2

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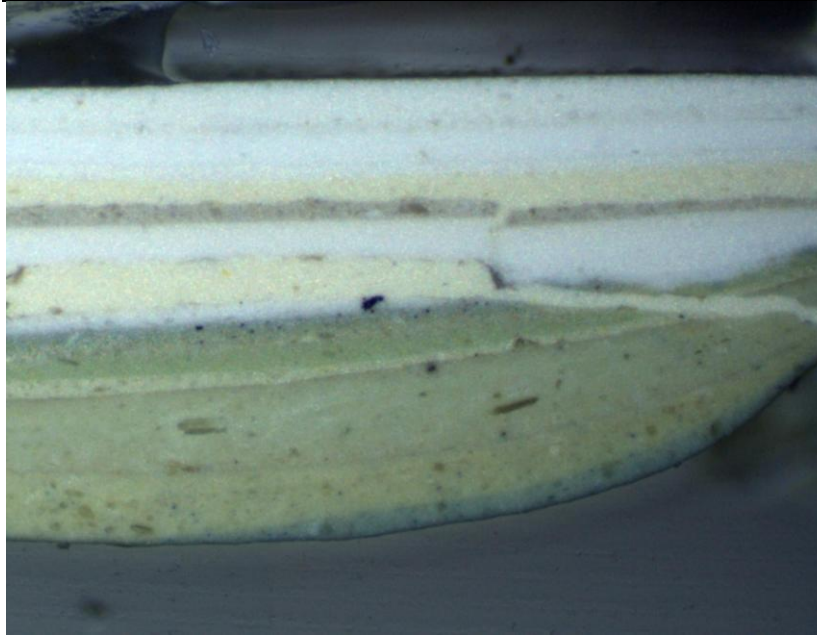


This sample is most representative of those taken from the south window surround room 107C (west kitchen). Modern finishes are all warm whites, the middle section of the chronology no longer present. The original campaign seen on wood substrate is a translucent gray. This gray is most likely the same as found in room 107A. These samples have evidence of paint prep by burning and also repair material.



Sample 107C-SW-2 was taken from the same widow surround detail but shows a much different chronology of finishes. Its jumbled state indicates paint prep. Original gray (although appearing much darker here) is followed by green primer and paint. The modern paint layers are warm white latex as seen in sample 107C-SW-1.

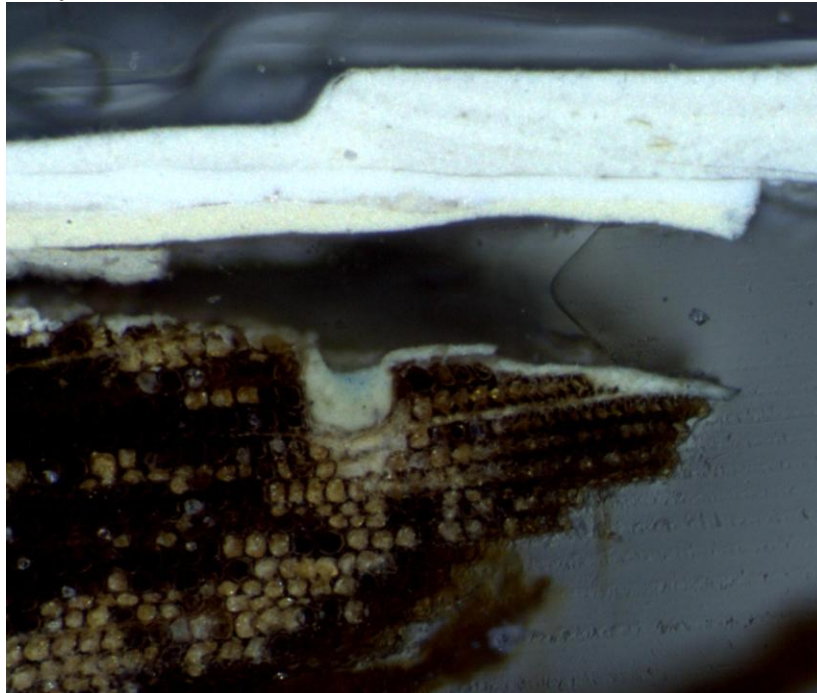
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This sample is most representative of those taken from the west door surround room 107C (west kitchen) with 14 layers.

Original finishes of creamy yellow and pale blue are followed by three campaigns of tinted creams; yellow and green. These are followed by a warm white primer and yellow paint, white primer under oatmeal, followed again by yellow. Modern latex layers are warm white.

Sample #: 107C-D-2



This additional sample from the west door surround room 107C (west kitchen) is included to confirm original finishes for this detail. Creamy yellow and pale blue captured in a small recess of the wood substrate. All middle campaigns are missing from this sample but resume with modern tan, yellow and warm whites.

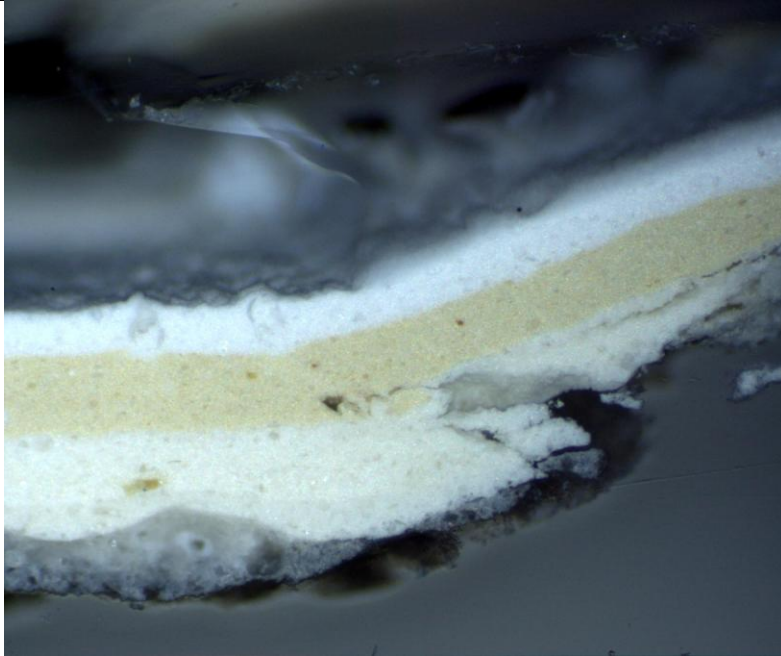
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Sample Location: Room 108 ticket office

Detail: east wall

Sample #:108-W-2



This sample is most representative of those taken from the east wall of room 108 (ticket office). A modern wall of unknown date shows a cream primer and yellow paint followed by warm white.

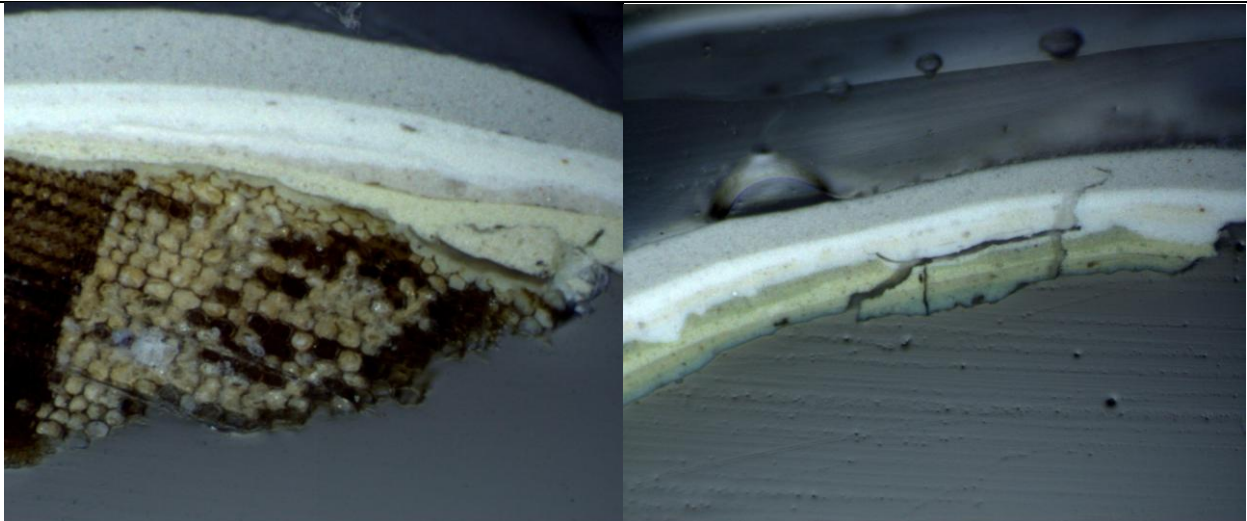
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Sample Location: Room 108 ticket office

Detail: door surround

Sample #: 108-D-1, 108-D-2



This sample is most representative of those taken from the east door surround room 108 (ticket office). Two cross sections are shown from the same detail to illustrate modern layers (left sample 108-D-1) but also early layers (108-D-2) which correspond to those from room 107C door surround beginning with creamy yellow and pale blue followed by the first two campaigns of tinted creams seen on the corresponding door surround in room 107C (west kitchen).

Results of paint analysis

Second Floor Rooms 207, 207A, 207B

207: Wall samples were taken on the north, south, east and west walls. One would expect to find more generations of paint but paint prep and repair was visible in many cross sections indication loss of information. The south wall samples most likely show the period one finishes of light gray followed by pale pink before additional plaster. The window surround samples on the other hand appear to have a complete chronology with up to 18 generations of finishes, which would be expected. Phase one on the window surround would have been a warm white. The door surround samples also indicate paint prep but the phase one gray is seen on the wood substrate and caught in later cream layers.

Period one wall: N 8.5/ white

Period two wall: 7.5YR 8.5/2 pinkish white

Period one window surround: N 9.25/ white

Period one door surround: GLEY 1 7/ light gray

207A: Wall samples were taken on the south, east and west walls. It appears that phase one layers are missing from the east and west wall and that the south wall cross section is the best indication of phase one finish which is gray. Samples from the south window surround and east door surround repeat this phase one gray. The west door surround chronology picks up in the modern paint layers, indicating an added element.

Period one wall: GLEY 1 7/ light gray

Period one window surround: GLEY 1 7/ light gray

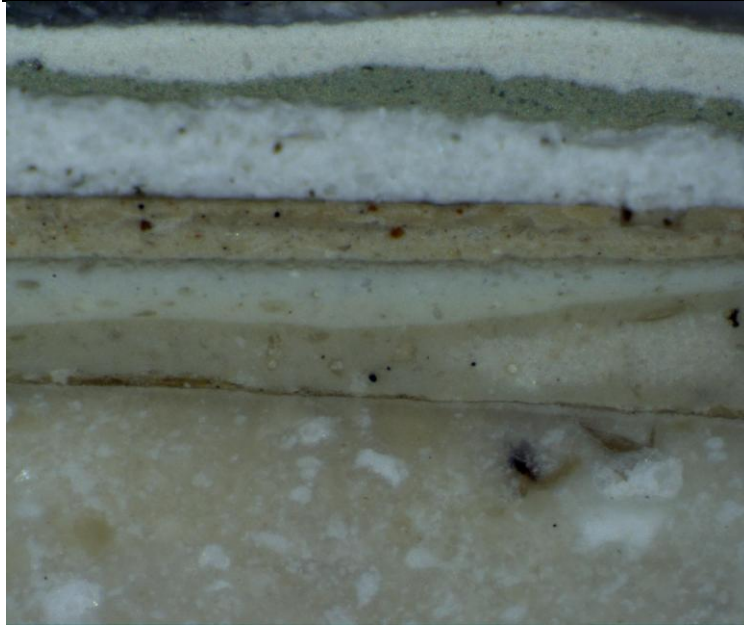
Period one door surround: GLEY 1 7/ light gray

Stratigraphy Sheets

Second floor

Nathaniel Russell House
Sample Location: 207 office
Detail: north wall
Sample #: 207-N-2

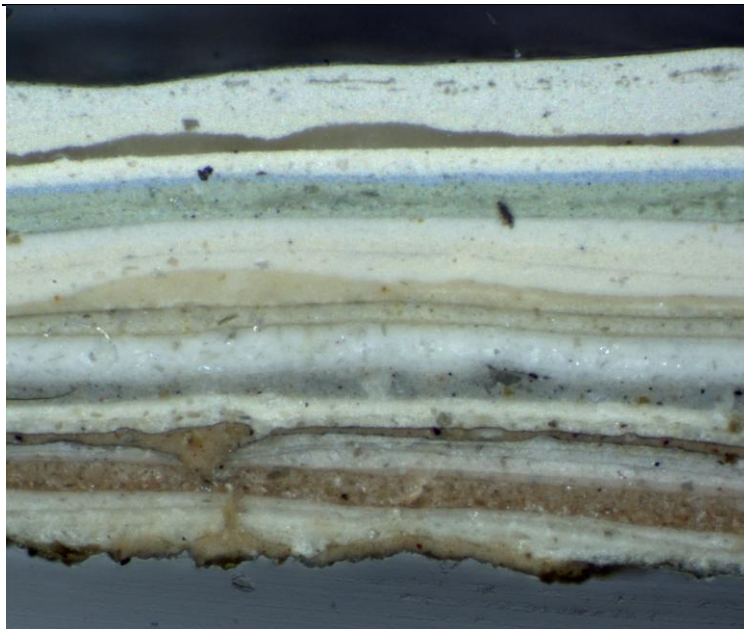
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This sample is most representative of those taken from the north wall, room 207 (office). On plaster substrate are two early primer and top coats of cream followed by two yellow creams. A repair material is next followed by green and modern warm whites.

Nathaniel Russell House
Sample Location: 207 office
Detail: north window surround
Sample #:207-NW-2

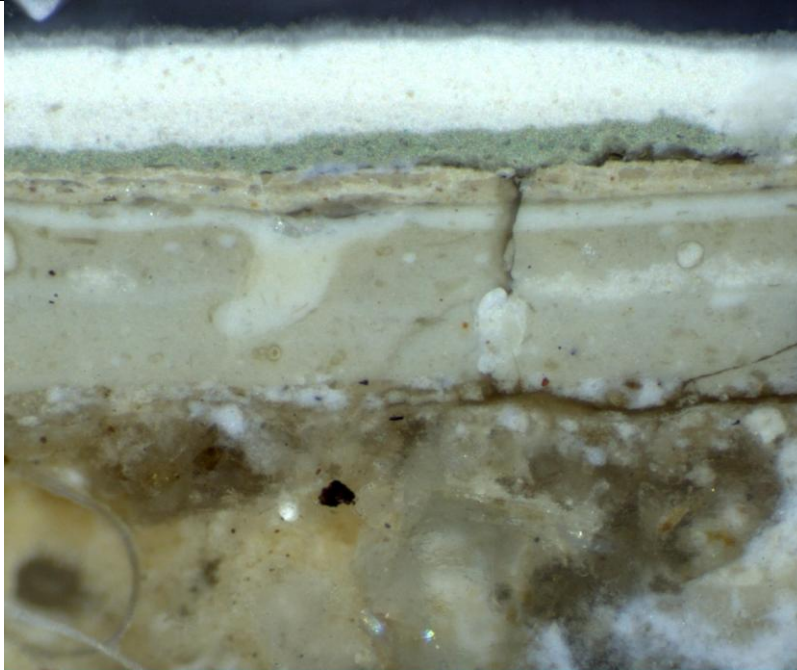
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This sample is most representative of those taken from the north window surround room 207 (office). From the sheer number of layers (18) you would have to assume this to be an original detail in this room. At least six layers of clear or tinted glazes are followed with a tan paint (seen in the photomicrograph as phase one but it seeped through a failure in the paint layers below it) with visible pigments. Creams and warm whites dominated the middle periods with pale green and blue finish before the modern warm whites which are interrupted by a separation between paint campaigns.

Nathaniel Russell House
Sample Location: 207 office
Detail: west wall
Sample #:207-W-2

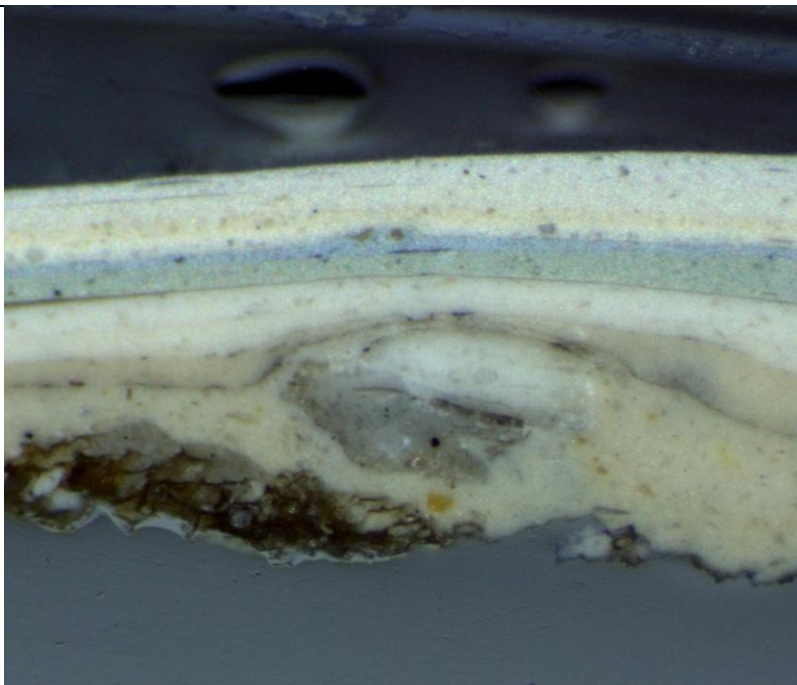
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This sample is most representative of those taken from the west wall, room 207 (office). Three coat plaster layers are visible before original primer and top coats of cream to cream yellow. Modern layers of green and warm whites follow. This sample is essentially the same as that seen in sample 207-N-2 without the repair material.

Nathaniel Russell House
Sample Location: 207 office
Detail: west door surround
Sample #:207-WD-2

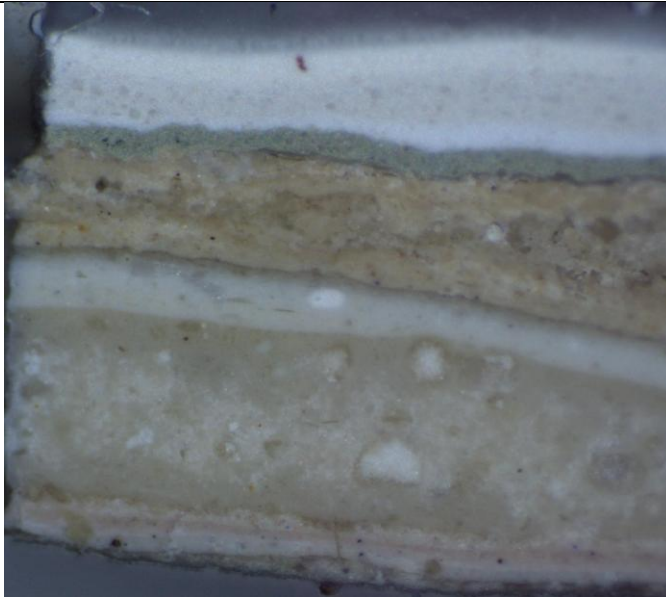
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This sample is most representative of those taken from the west door surround room 207 (office). Phase one gray is seen on the wood substrate followed by campaigns of cream poorly mixed with yellow pigments and voids. Phase four is warm white. Green and blue are the same as seen in north window surround samples (207-NW-2) followed by yellow (in the location of the separation in the window surround samples). It is followed by modern warm whites.

Nathaniel Russell House
Sample Location: 207 office
Detail: south wall
Sample #:207-WS-3

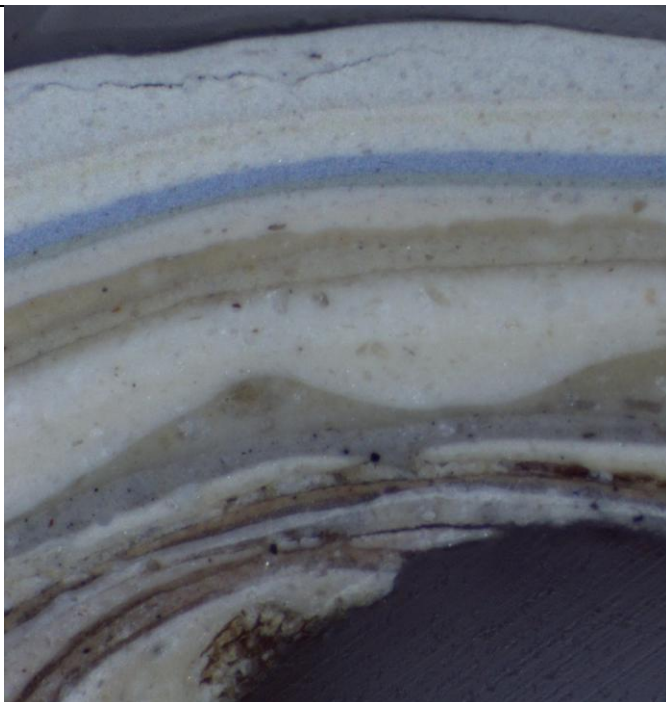
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This sample is most representative of those taken from the south wall, room 207 (office). Very similar finish layers are seen in comparison to the north and west wall samples with a few differences probably due to paint prep or repair on this wall. An early translucent and pigmented (pale flesh color) layer is seen before plaster layers. Primer and top coats of cream to cream yellow come before modern layers of green and warm whites.

Nathaniel Russell House
Sample Location: 207 office
Detail: south window surround
Sample #:207-SW-3

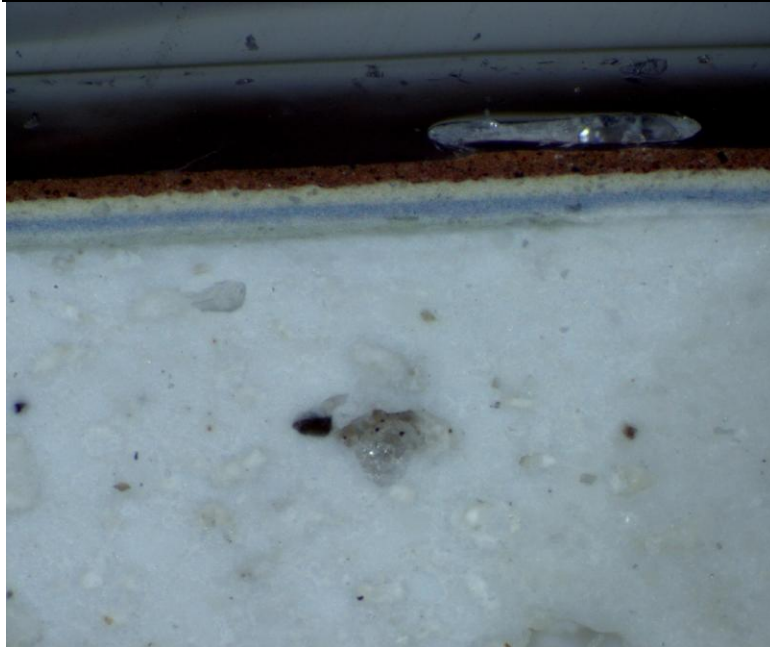
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This sample is most representative of those taken from the south window surround room 207 (office). This sample confirms the chronology found on the north window surround (207-NW-2).

Nathaniel Russell House
Sample Location: 207 office
Detail: east wall
Sample #:207-E-1

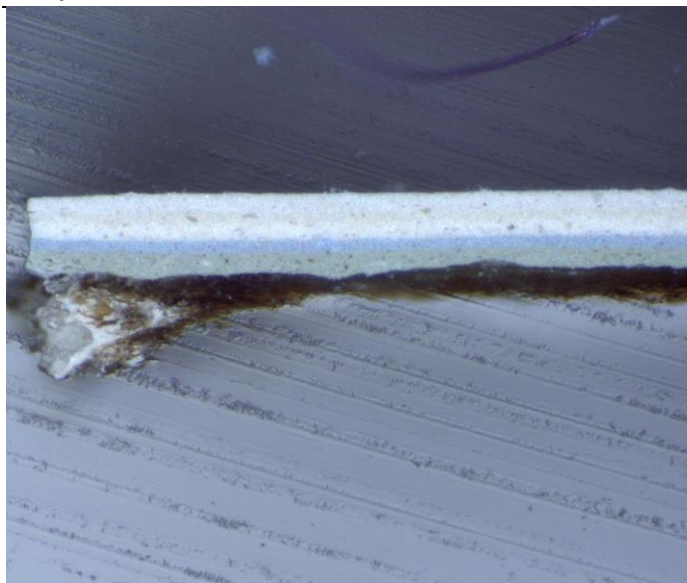
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This sample is most representative of those taken from the east wall, room 207 (office) inside the closet. A modern plaster layer (possibly a repair or some kind) is finished in a creamy green followed by white primer and blue paint. White primer and yellow and most recent rust red complete the chronology.

Nathaniel Russell House paint analysis
Sample Location: 207 office
Detail: south wall cornice
Sample #: 207-SC-1

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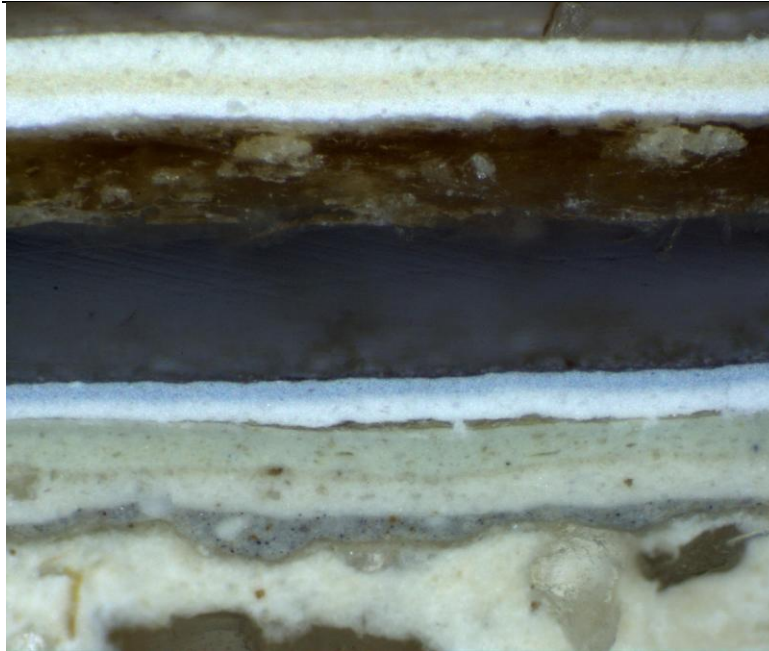


This sample is most representative of those taken from the cornice, room 207 (office).

Cornice samples show little original finishes. Plaster is covered in a sealant (possibly a shellac product as it auto fluoresces orange under UV light). Modern layers of pale green, blue and warm whites follow without primers.

Nathaniel Russell House
Sample Location: 207A outer office
Detail: south wall
Sample #: 207A-S-1

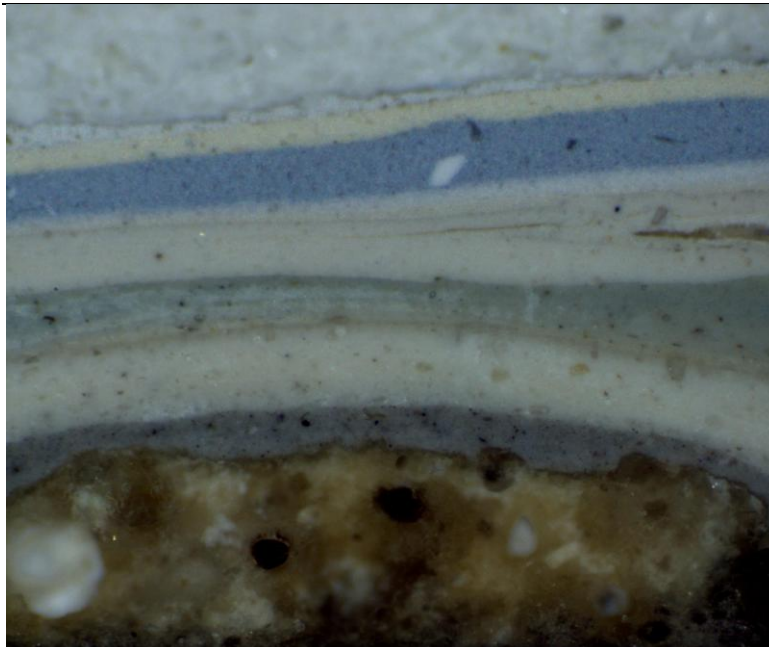
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This sample is most representative of those taken from the south wall, room 207A (outer office). A very wavy uneven plaster layer (possibly a repair or some kind) is finished in a highly pigmented gray, cream and creamy green follow. A separation is followed with a white primer and blue paint layer. Another separation indicates a paper layer above which appears in this sample to only have one homogenous color. Modern paint layers of warm white, yellow and warm white complete the chronology.

Nathaniel Russell House
Sample Location: 207A outer office
Detail: south window surround
Sample #: 207A-SW-2

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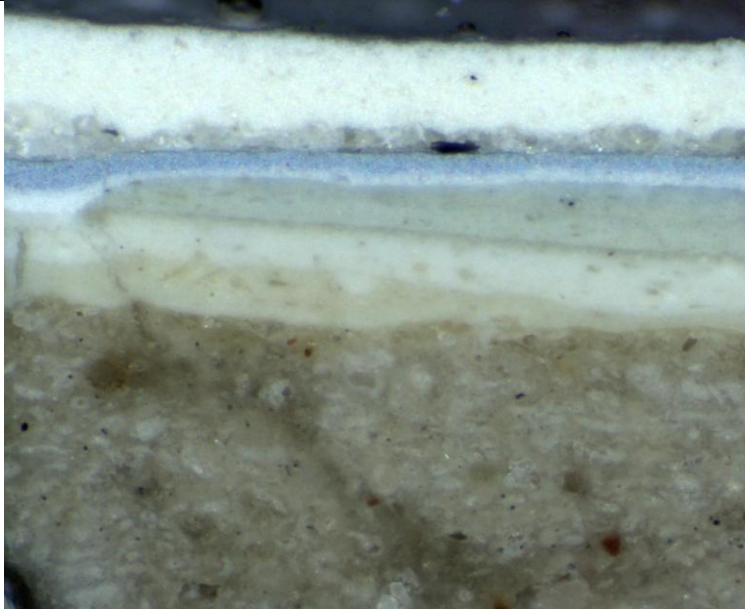


This sample is most representative of those taken from the south window surround room 207A (outer office). The most modern layers of white and yellow are not in the photomicrograph.

Wood substrate was originally painted dark, pigmented (black) gray. Cream, green and cream follow. A white primer and blue top coat followed by yellow white, a repair layer and again yellow and white represent the modern finishes.

Nathaniel Russell House
Sample Location: 207A outer office
Detail: east wall
Sample #: 207A-E-1

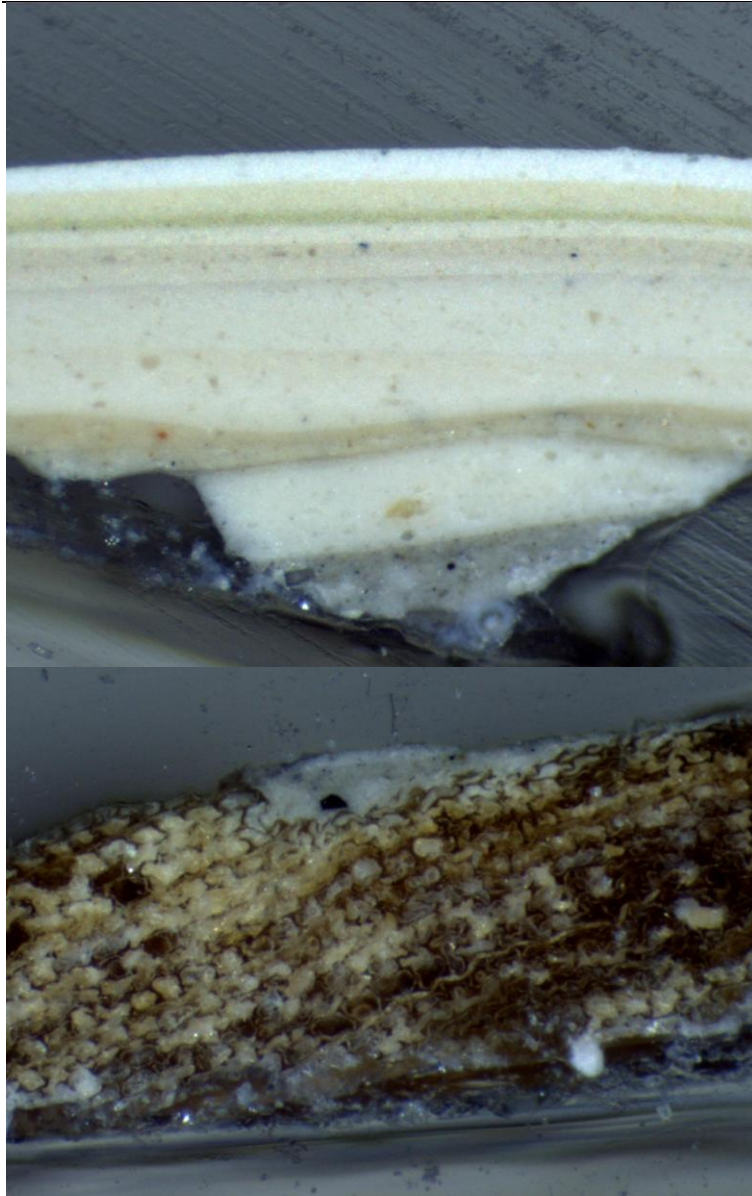
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This sample is most representative of those taken from the east wall, room 207A (outer office). Samples from this wall do not show a gray original layer but instead begin with cream, creamy green seen as second generation on the south wall (207A-S-1). The white primer, blue finish coat is the same as found on the south wall followed by repair material (or very cheap primer). The modern layers are warm white. The modern yellow found in south wall samples was not evident on any of the east wall samples.

Nathaniel Russell House
Sample Location: 207A outer office
Detail: east door surround
Sample #: 207A-ED-1

November/December 2012



This sample is most representative of those taken from the east door surround room 207A (outer office). Wood substrate exists for this sample but fractured (see photomicrograph below). Original finish is a pigmented gray which appears to be the same seen in 207 office, west door surround (207-WD-2). Many generations of warm white to cream hues paints follow. Modern finishes of cream, green and cream yellow are followed by warm white.

Nathaniel Russell House
Sample Location: 207A outer office
Detail: west wall
Sample #: 207A-W-1

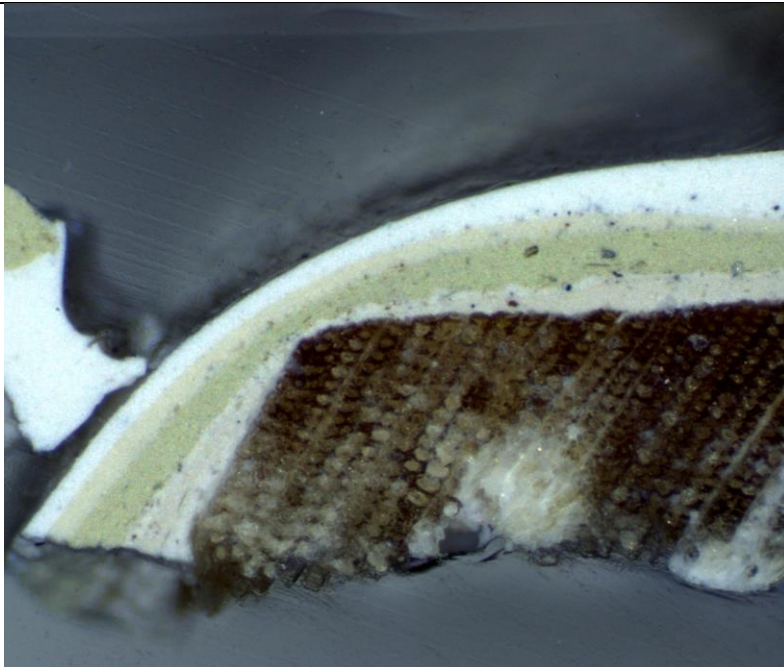
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This sample is most representative of those taken from the west wall, room 207A (outer office). Samples from this wall begin with the familiar white primer and blue finish coat layer. Adhesive (wallpaper paste) is followed by wallpaper and a pigmented layer (yellow, orange, white and red) indicating a multi colored pattern. The most modern layers are warm white, yellow and warm white.

Nathaniel Russell House
Sample Location: 207A outer office
Detail: west wall door surround
Sample #: 207A-WD-1

November/December 2012



This sample is most representative of those taken from the west door surround room 207A (outer office). This sample has only modern layers which correspond to the east door surround in this room (207A-ED-1). Cream, green and cream yellow are followed by warm white.

Appendix

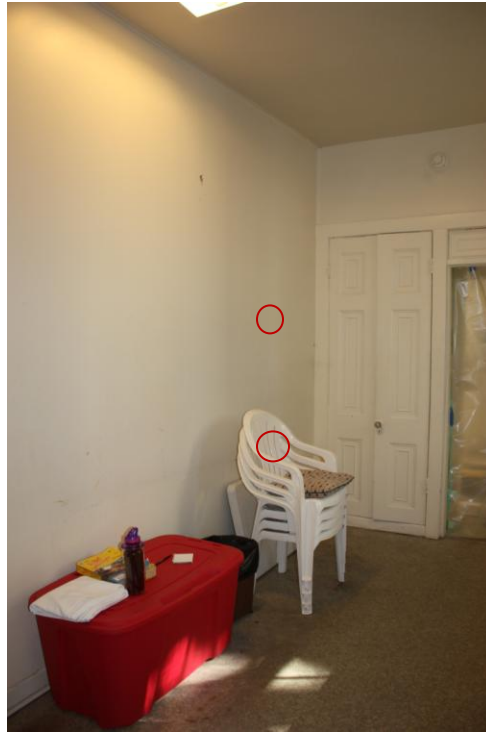
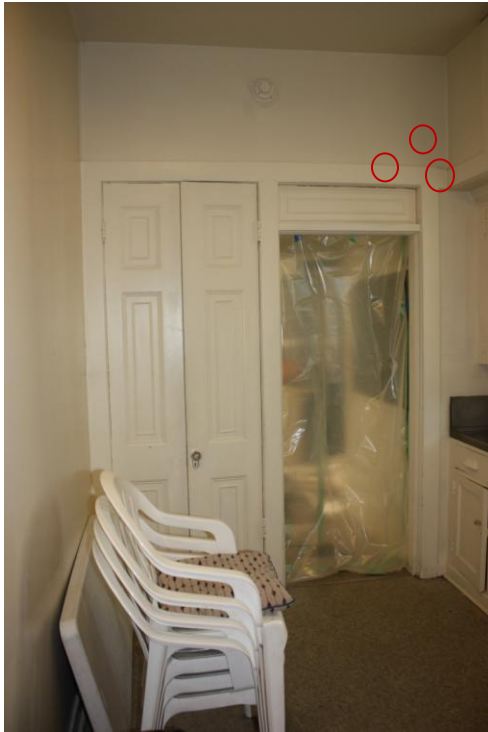
Sample area locations (circled in red)

First floor: Room 107A North wall

and at door



Room 107A West wall and door surround and south wall



Room 107 B North wall



and west wall



Room 107C West wall



and door surround



Room 107C South wall and south window surround



Second floor: Room 207 West wall and door surround



Room 207 South wall, window surround and cornice



Room 207 North wall and window surround



Room 207 East wall inside cabinet



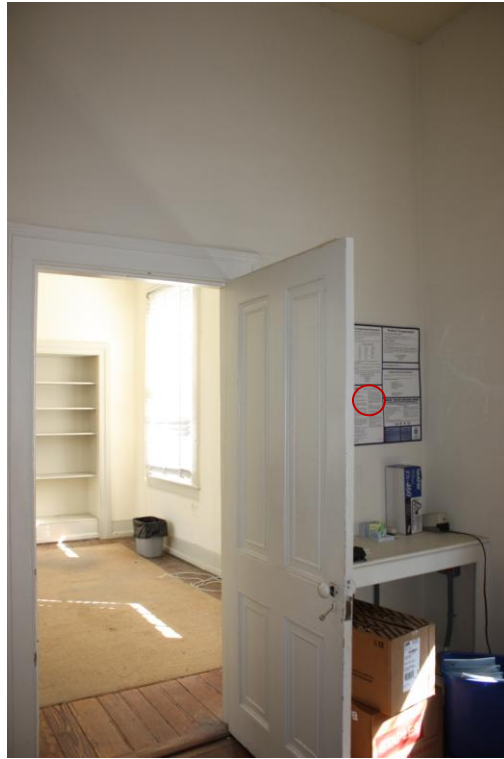
Room 207A South wall and window surround



West wall and door surround



Room 207A east wall and east door surround



Room 207B (bathroom) east wall over bathtub tile

Photo not available