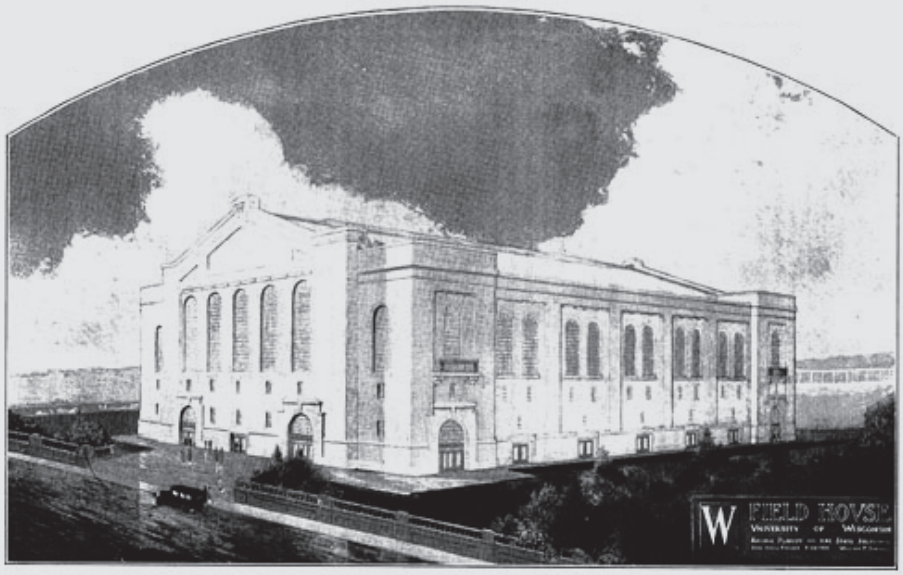
Appendix E
Materials Analysis

Paint Analysis and Investigation

UNIVERSITY OF WISCONSIN FIELD HOUSE

Madison, Wisconsin



UNIVERSITY FIELD HOUSE

Submitted by Ron Koenig, Conservator
Building Arts & Conservation

November 17, 2018

OVERVIEW

The University of Wisconsin's Field House was constructed in constructed between 1929 and 1930. Its elegant design gracefully balances its large-scale massing with the refined details of the Renaissance Revival. It is simple yet grand, and its ornate exterior banding, full-height pilasters, and dignified fenestration belie the functionality of its utilitarian interior. This justaposition of simple interior with elegant exterior can be seen in other early 20th century American sport buildings such as Albert Kahn's Detroit Athletic Club, McKim, Mead, and White's Racquet and Tennis Club of New York, and the University of Michigan's Intramural Sports Building and Yost Field House (both designed by Smith, Hynchman, Grylls). Though UW's Field House is essentially a one-story-tall building, its height is equivalent to a five-story building and contains an enormous five-story-tall space that is 200 feet wide, 235 feet long, and open all the way up to the rafters and exposed roof trusses.

The goal of this paint investigation was to understand the paint colors used during its history, with the intent of choosing appropriate colors for repainting. Investigation and analysis carried out by Building Arts & Conservation focused on sampling, testing, and microanalysis to determine general colors and media types.

METHODS AND MATERIALS

Finishes were examined in-situ and through sampling and microscopic analysis. The painted finishes found the building's interior and exterior were analyzed primarily for hue. Areas where paint samples were taken included:

- Interior and Exterior Windows
- Walls
- Structural Elements
- Transoms
- Entry Entablatures, Moldings and Surrounds

Microscopic Analysis

Microscopic paint analysis was used to determine the evolution of painted finishes on the Field House through cross-sectional examination. Samples were taken from representative elements using chisel-edged exacto knives, then transferred into small, zip-lock sample envelopes. Envelopes were labeled and keyed to each sample's specific location.

Samples were analyzed using an Olympus SZ binocular microscope equipped with a Stocker & Yale color-correct light-source, allowing matching to occur at 5200K. 5200K is recognized as the international lighting standard for color matching. Analysis consisted of matching the layers of paint in cross-section and determining their likely date of application based on their position in the overall stratigraphy.

Paint microanalysis uses the archaeological model for context, which posits that the lowest layers of paint on a sample--those closest to the substrate--are the earliest. Each point at which paint is applied to a building is referred to as a "painting campaign;" i.e. when a primer and paint finish are applied together this is considered one *campaign*.

Where dirt layers were present, it was assumed the finish beneath that layer had been exposed for a relatively long period of time. In some instances, dirt appeared between the substrate and the first layers in a stratigraphy. This was indicative of either; 1) the loss of early paint through degradation or scraping for paint preparation; 2) a period of time elapsing after construction, but prior to the surface being painted; or 3) detachment of paint and then readhesion by later paint applications. Colors were matched to *Sherwin-Williams Color® System* (2001). Color notations in this report reference this Sherwin-Williams system. Primary matches to first painting campaigns have been cross-matched with corresponding Munsell® colors.

Wherever possible, all samples included a full paint stratigraphy and a section of substrate. In many areas loss of paint evidence was obvious because of differences in paint accumulation; samples were always taken from areas where paint appeared thickest. The inclusion of substrate was important in establishing context and to ensure the target strata were included in each sample. Samples were placed in specimen envelopes, labeled, and keyed to their locations.

The earliest paint layers--those applied during construction--were the primary focus of this investigation. While these "target layers" were matched to their corresponding SW reference numbers, other paint layers were often called out by their general color; i.e. "yellow" or "salmon." In some instances, other interesting layers were matched to Sherwin-Williams numbers if they added context for earlier layers (i.e. the different shades of gray-green on the windows).

In some instances, color photomicrographs were taken to document stratigraphic information. Micrographs were taken through the Olympus SZ Trinocular microscope using a Nikon D3200 camera fitted to a standard C-mount, and downloaded to a Macintosh MacBook Pro. A number of these micrographs are included with this report. It should be noted that while micrographs are useful for establishing the contextual relationship of one paint layer to another, they are not particularly color-correct and are thus not an accurate tool for choosing specific colors. The written section of the report should be utilized for reinstating historic colors.

Cratering

A small 12.5-power Eschenbach hand-held field lens, fitted with a light, was used to examine some surfaces. A curved scalpel was used to cut small "craters" into the surface and paint layers were examined through the lens, thus allowing us to understand how these surfaces were painted and maintained In some cases photographs were taken through the hand lens to record paint histories.

FIELD HOUSE: Discription of Finishes

INTERIOR

Windows

The upper, arched, steel casement windows have not fared well in Madison's harsh climate (Photo 01). Much of their paint has cracked and peeled, leaving areas of bare metal. Although some of the steel shows rust, the window units are generally in remarkably good condition, and with little restoration and reinstatement of their hardware could function as they were designed.

All of the Field House's metal windows were first primed (probably at their factory) with a bright orange yellow chromate/red lead primer, inside and out. At some point in their history the inside window surfaces were coated in a lead-bearing gloss-black paint to darken the inside of the arena, but most of this paint has failed. Remediation and professional abatement should be carried out through first manually removing loose fragments, then following with chemical paint strippers to remove any remaining LBP (Lead-Based Paint). A good choice for paint remover is MasonRE S-303®, manufactured by Cathedral Stone Products, in Hanover, MD. This paint remover is non-toxic, environmentally friendly, and will very effectively remove the paint without causing the level of lead hazard dry removal would create. All paint removal procedures should of course be carried out by certified, abatement professionals.

Representative samples were taken from eight areas on the interior window system (Diagram 1), and examined to determine their chromachonology. The window and its surround elements were originally painted a gray-green (SW 6176), then medium gray (SW 7067), then black, and finally white (Photo 02). The window putty was originally painted deep black (SW 6258), probably so they would visually recede from the relatively flat windows, and was later painted white, then black, then white, then black again, before it was painted its current white color (Photo 03). The interior Window Recess and Outer Stool are a cementitious sanded plaster that was first painted an off-white; it is not clear if this painting occurred at the time of construction (1930) or whether the walls and window recesses might have initially been left raw (Photos 04-05).

The paint schemes used on the Lower Elongated Windows were identical to those used on the Upper Arched Windows.

Arena Walls

An examination of paint samples taken from the Arena's interior walls revealed them to have been painted only twice, both times in white (first SW 7566, and then SW 7055).

Structural Members

The exposed structural members in Field House Arena are an essential part of its visual impact and their painting schemes are therefore highly significant to its look and feel. Microscopy of samples taken from the trusses and beams above the top balcony revealed they have never been repainted, and are therefore currently the color they were painted when the building was constructed (See Diagram 4 in Appendix 1 (*UW Field House Paint Analysis*). The sheathing at the ceiling was originally stained a deep-brown (SW 3114-P). To match the ceiling's original color and matte sheen we recommend cleaning these surfaces, and then applying Sikkens SRD® exterior stain in Dark Oak®.

Although the "H" beams under the balcony seating remain their original color (SW 7067), the other lower structural members have been repainted in new colors (See Diagram 3 in Appendix 1 (*UW Field House Paint Analysis*). Their original paint scheme was as follows:

1) Vertical "H"-beam Columns at the wall were originally painted a deep black (SW 6258), and later were painted their current lighter color (SW 6085).
2) Primary Diagonal "I"-beams were originally painted a medium gray (SW 7067), but were later painted a deep-red (SW 6593), then a bright-red (SW 2913), which was striped white.
3) Lower "H"-beam balcony support columns were originally painted a medium gray, but later painted their current bright-red (SW 2913)

Southwest Transom

The southwest transom is now white, it was originally painted a medium gray (SW 7067). It's sashes, muntins, and stops were later painted charcoal-black, and its dividers and outyer moldings white. At a later date, the entire transom was painted its current hue of white.

Foyers

The walls of the Field House's outer circulating space were originally painted white overall (SW 7551); the lower walls were painted their current deep-red (SW 7587) during the same campaign. At some point in their history the glazed brick door surrounds were painted white (SW 7551), and then later deep-red (SW 7587).

FIELD HOUSE: Discription of Finishes

EXTERIOR

Windows

The outside surfaces of the Field House windows are in a similar condition to their inside surfaces, showing an appreciable percentage of soiling, cracking, peeling, and general loss (Photo 6). Both the upper and lower windows had the same stratigraphy; they were first painted a light gray-green (SW 6177), followed shortly after by a medium-yellow buff (SW 7691); after some time, they were repainted a light gray, then later a light gray-brown, and finally their current off-white color (Photo 07).

Southwest Transom

The transom over the entrance at the south-end of the west elevation (Gate "C") displayed the same early paint-color history as the exterior windows: first light gray-green (SW 6177), followed by yellow-buff (SW 7691), but was then painted during three different campaigns in white. The doors to this entrance have been replaced with unsympathetic steel fire-doors and could not be sampled (Photo 08). The outside of the transom windows could not be sampled due to their being covered over.

South Arched Doorways

Representative samples were taken from the historic doorways on the south elevation (Photo 09). Unfortunately, their 1930 half-light doors (Photo 10) have been replaced with modern fire-doors, and were therefore not available for analysis. The early chromachronology of the upper arched window configuration was consistent with the colors used on the outside of the Field House's other windows, with surfaces first being painted light gray-green (SW 6177), then yellow-buff (SW 7691). These windows however, were then painted White, Off-White, and Ocher, before being painted their present color. The more accessable lower wood door casings, however, were notable in the complexity of their stratigraphies: These elements were first painted the ubiquitous light gray-green (SW 6177), then soon after repainted in this same color. They were then painted a warm gray (SW 6170), then beige, light brown, off-white, bright crimson (SW 7586), and white, before receiving their present paint color (Photo 11). The bright crimson layer was puzzling, until photodocumentation showed the south elevation doors and doorways were painted this bright red in the 1980s (Photo 12).

Field House: Cross-Matches List

Element(s)	Closest Sherwin-Williams Color	Munsell
Interiors Windows	SW 6176 Livable Green	5GY 8/1.5
Window Putty	SW 6258 Tricorn Black	N 2.25/
Outer Stool	SW 6119 Antique White	5Y 9.5/1
Arena Walls	SW 7566 Westinghouse White	N 8.75/
Vertical Columns	SW 6258 Tricorn Black	N 2.25/
Diagonal Beams	SW 7067 (Cityscape)	N 5/
Interior Transom	SW 7067 (Cityscape)	N 5/
Foyer Walls	SW 7551 (Greek Villa)	N 9.26/
Exterior Windows & Millwork	SW 6177 (Softened Green)	7.5GY 7/2

Field House: Conclusions

The goal of this investigation was to better understand the finish materials used to paint the University of Wisconsin Field House, as well as their condition, how their colors have changed, and how best to improve the building's longevity. Over its eighty-eight years this sports complex has seen hard use, but was in much better general overall condition than expected.

Paint is applied for two reasons: to beautify and to protect. Much of the Field House's paint is worn, shows cracking and loss, and is not pretty. For the most part, however, its paint has continued to protect the wood, metal, plaster, and concrete used in its original construction. It is obvious that the finest materials and technologies available in 1930 were used in its construction, and having such "good bones" should help immensely in returning this magnificient structure to its prior functionality and glory.

Photographs

Plate 01: Much of The Paint On The Building's Upper Windows Is Failing, But The Windows Themselves Are In Relatively Good Overall Condition

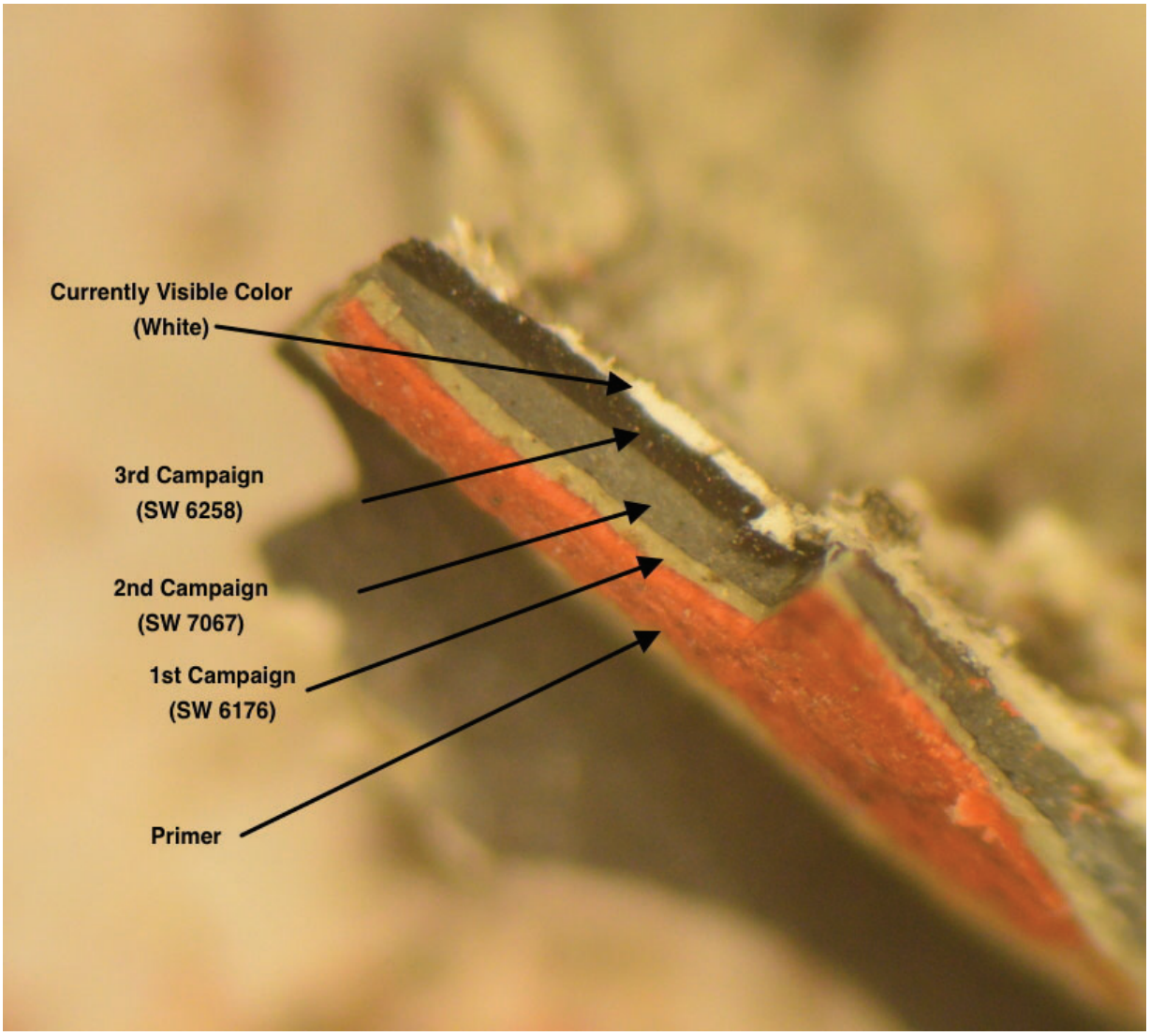


Plate 02: Microphotograph Showing Multiple Finish Applications. The Second, light Gray-green Strata Was The Color Originally Intended For The Inside Of The Windows.

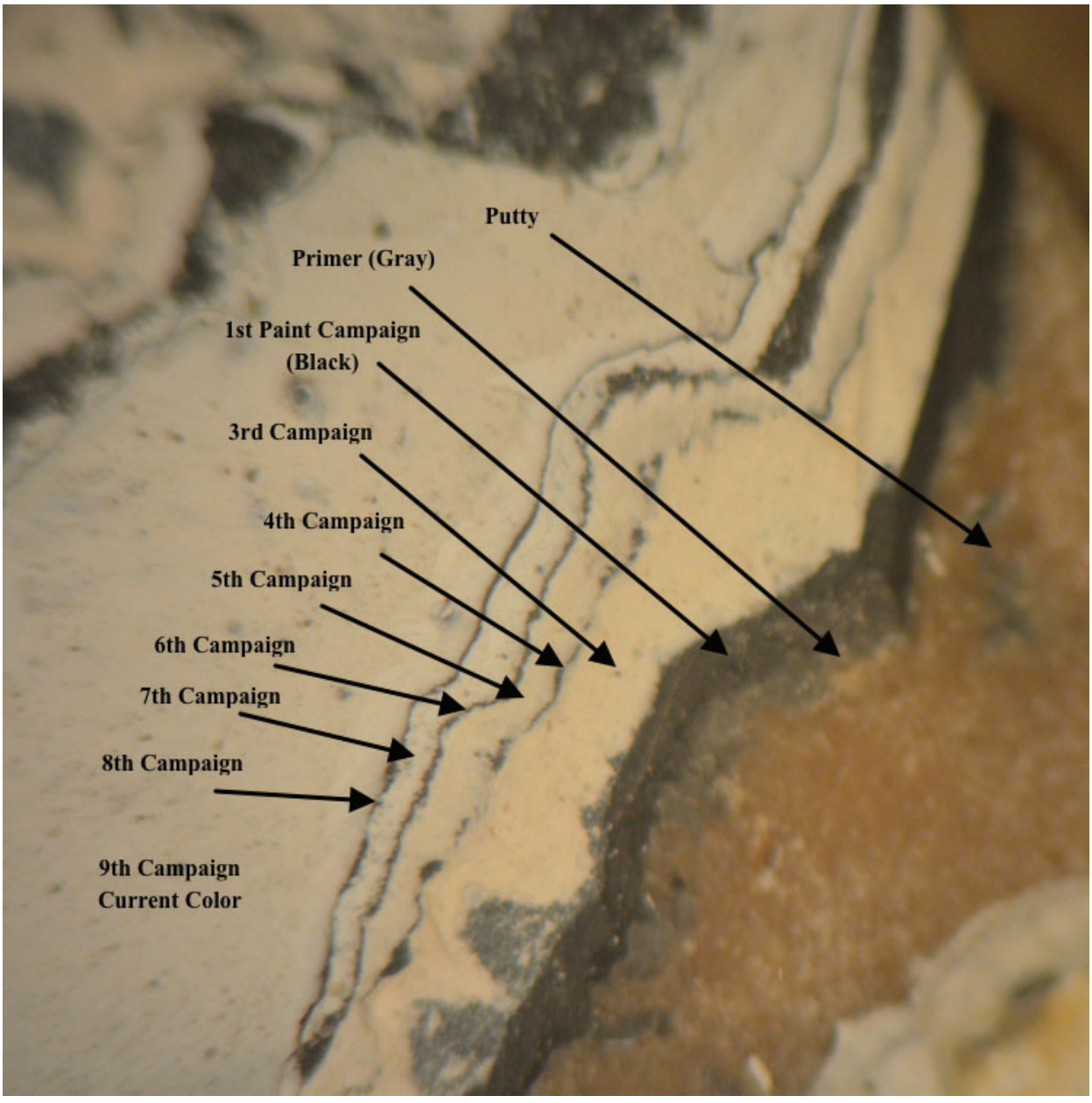


Plate 03: Photo Showing Window Putty Magnified 100X; It Was Originally Painted Black To Create Contrast Between The Glass And The Window Frames.

Plate 04: Graduation In The Field House In 1933; The Walls Appear To Have Been Unfinished

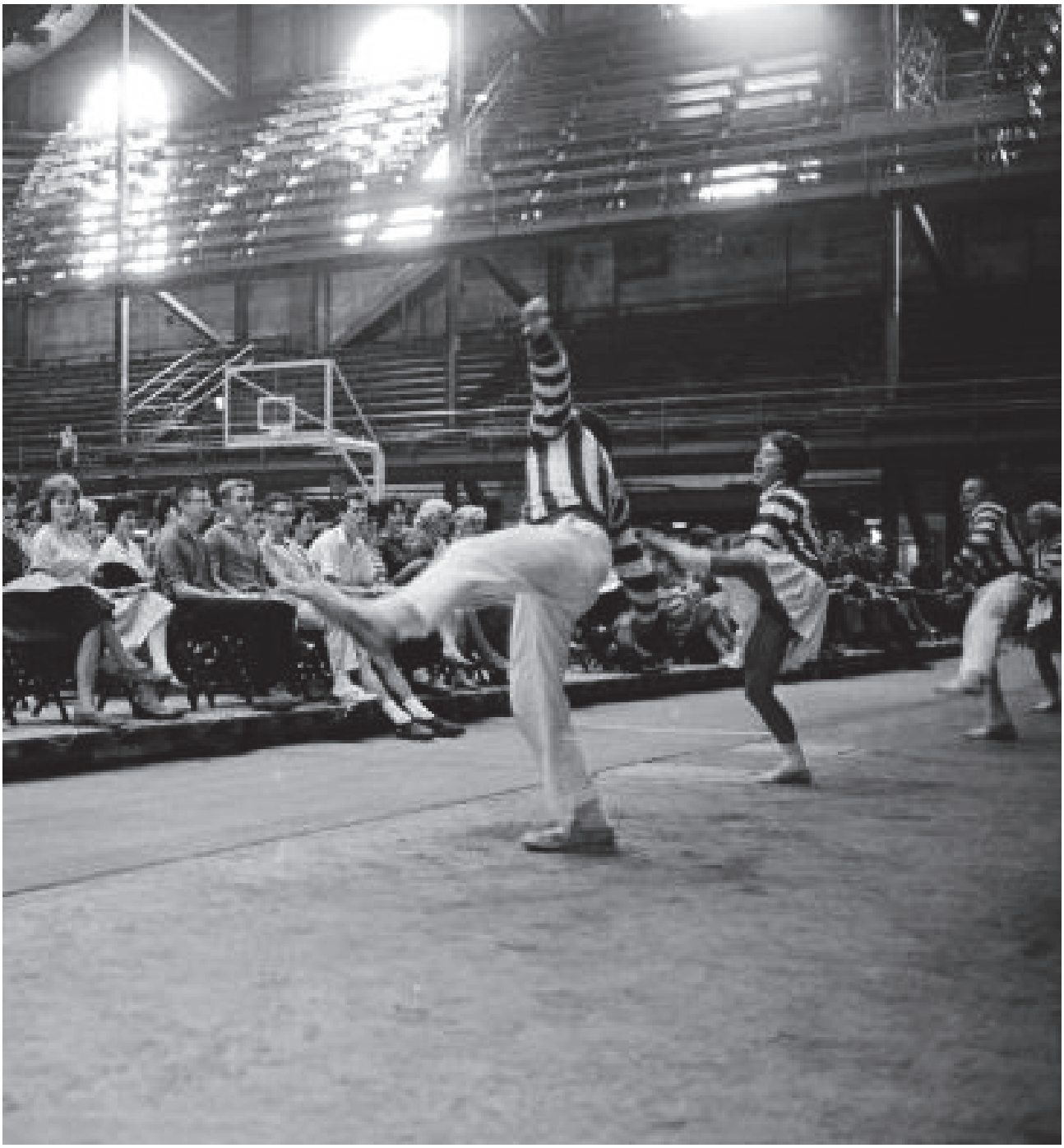


Plate 05: The Walls Still Appear To Be Unfinished In This 1961 Cheerleading Photograph

Plate 06: The Field House Windows Are In Good Structural Condition, But Much Of Their Exterior Paint Has Failed

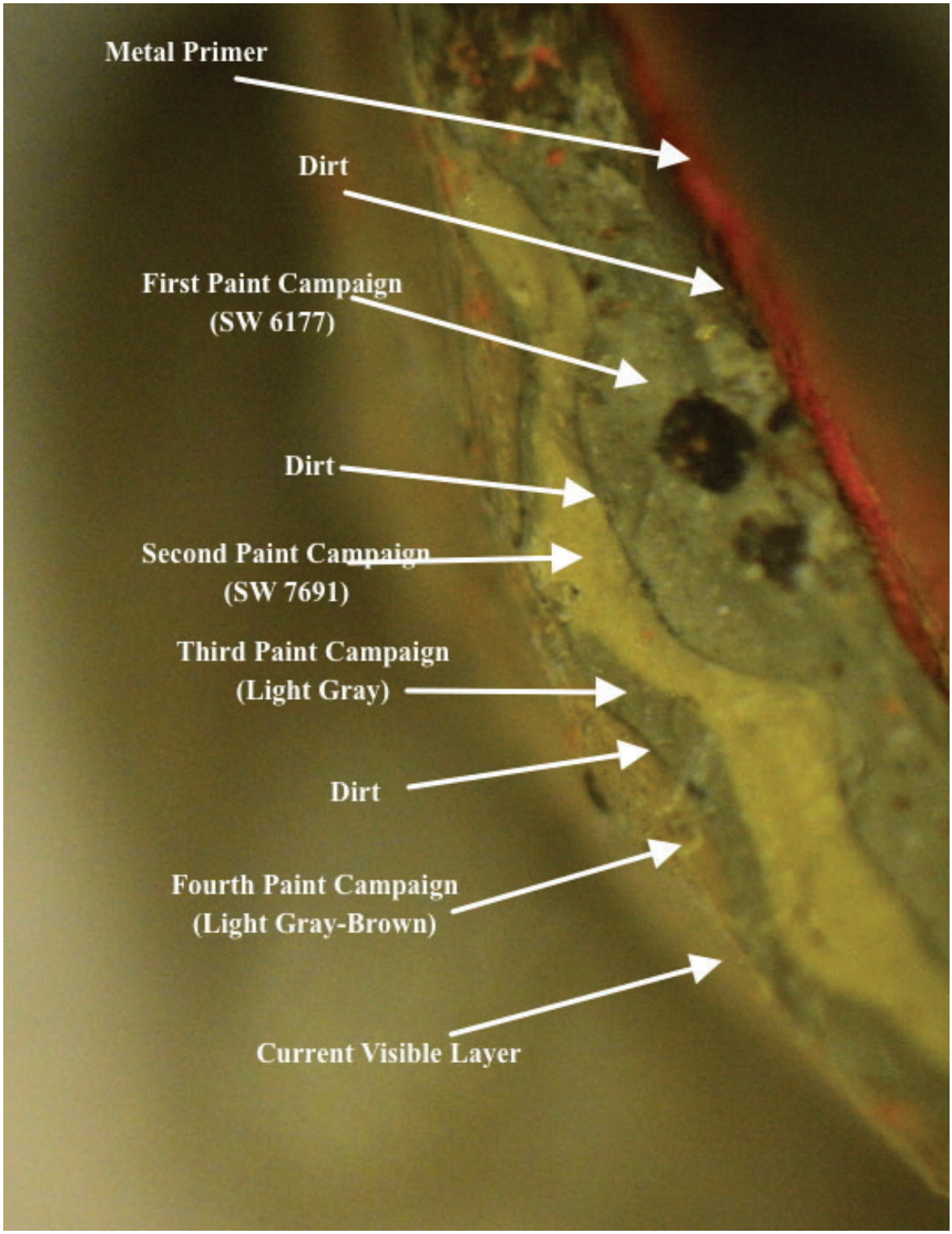


Plate 07: The Outside Surfaces Of The Field House Windows Were Painted On Five Different Occasions. The Second (Buff) Campaign May Have Been Intended To Match The Exterior Stone

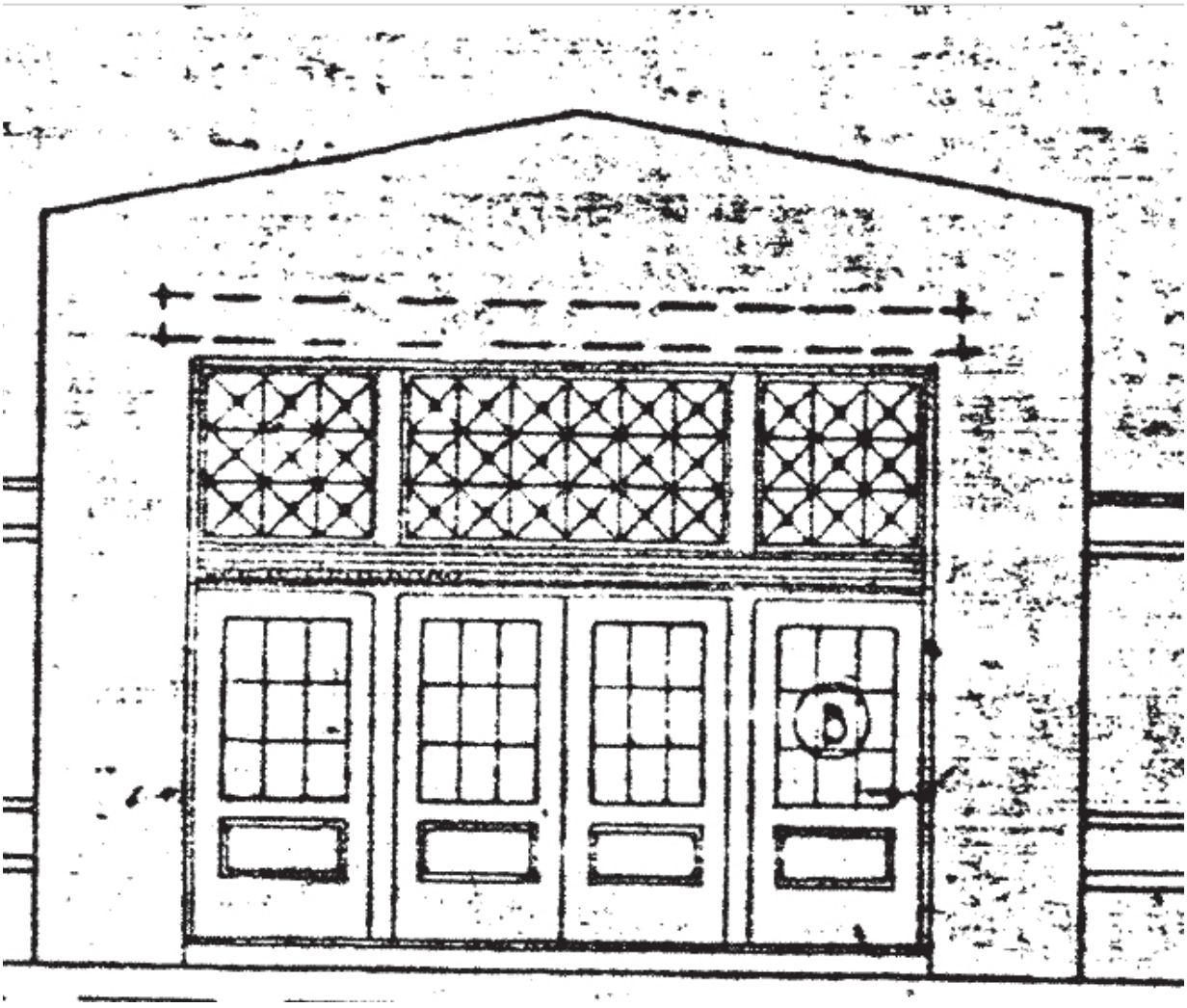
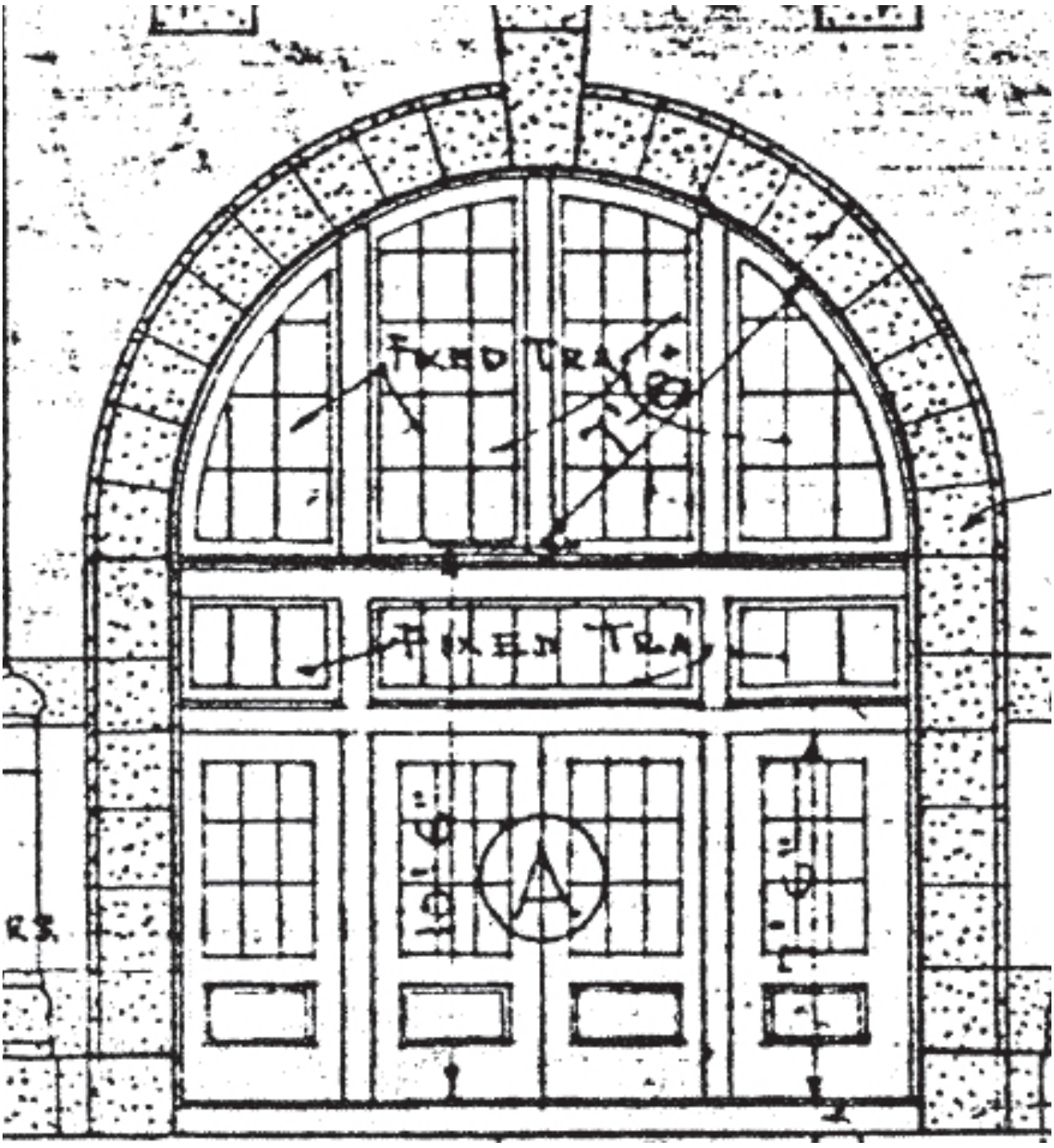


Plate 08: Detail From Peabody's Original Drawings Showing The Building's Original ¾-Light Doors. These Were Likely Stained and Varnished Oak. They Have Been Replaced By Modern Steel Doors



Photos 09: Detail From The Original Bid Drawings Showing The South Elevation's Original ¾-Light Doors

Photo 10: Other Than Their Doors, The South Doorways Have Retained The majority Of Their Original Elements

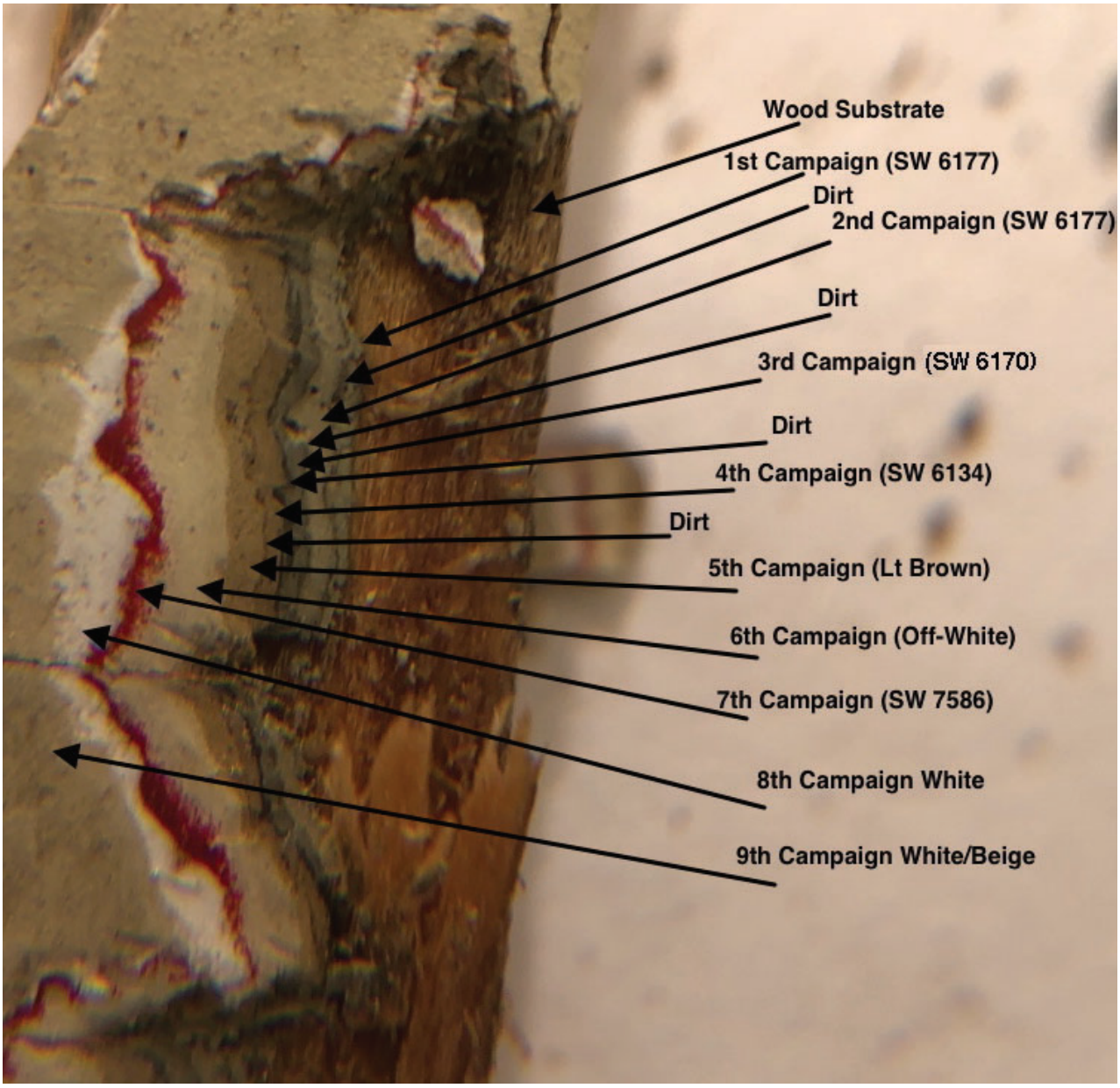


Photo 11: Microanalysis On The South Elevation Door Casings Revealed They Were Painted Much More Often Than The Doorways' Upper Elements

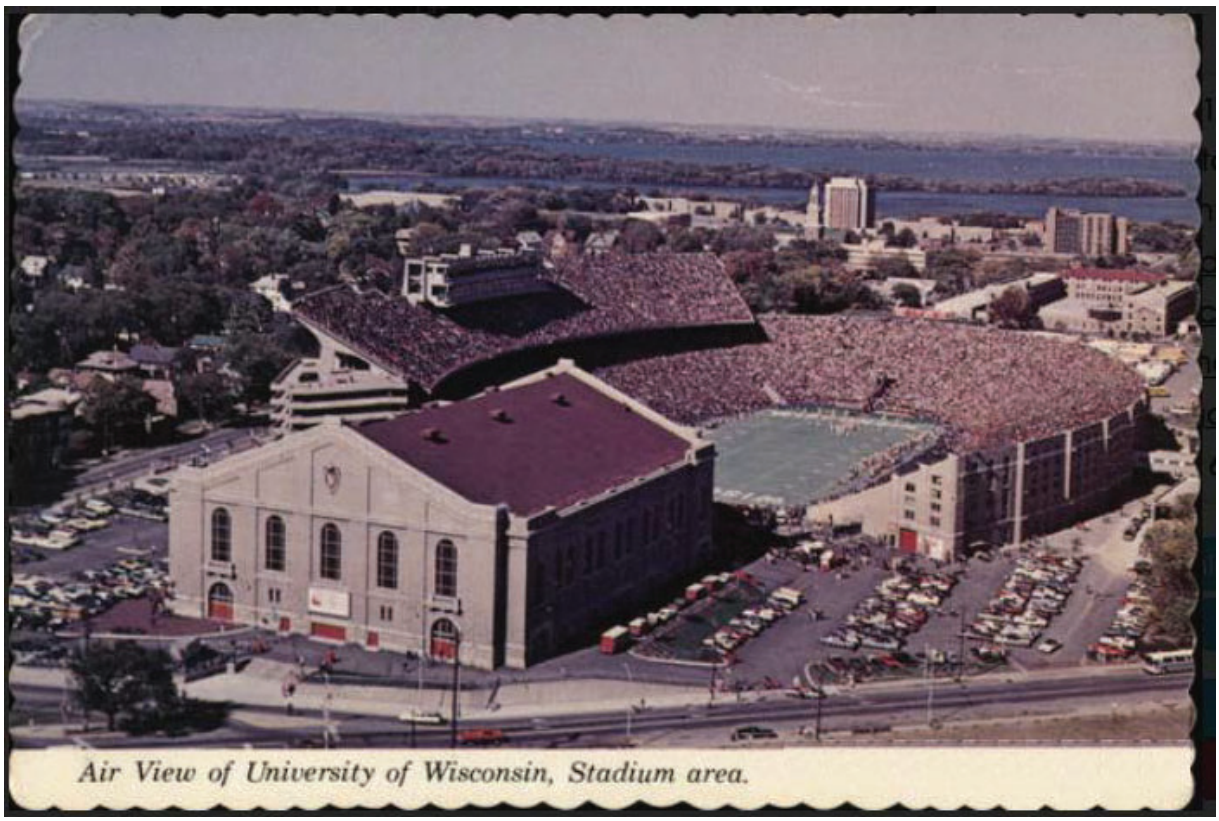


Photo 12: Circa 1984 Postcard Showing The Field House Entrances Paint Crimson

Appendix 1: UW Field House Paint Analysis

PART 1: INTERIOR

Area Sampled: Arena Arched Upper West Windows (See Diagram 1)
Substrate: Metal

1. Hollow boxed-in casing

Layer	Color	Match	Notes
1) Metal substrate			
2) Primer	Orange		
3) Paint	Light Gray-Green	SW 6176 (Liveable Green)	Original Paint*
4) Paint	Medium Gray	SW 7067 (Cityscape)	2nd Campaign
5) Paint	Black		Window Black-out
6) Paint	White		Current Layer

2. Wire grills over windows (Added Later?)

Layer	Color	Match	Notes
1) Metal Subtrate			
2) Factory Primer	Black		
3) White			

3. Window Putty

Layer	Color	Match	Notes
1) Metal primer	Orange		
2) Putty (substrate)			
3) Primer	Gray		
4) Paint	Black	SW 6258 (Tricorn Black)	Original Paint*
5) Paint	Cream-White	SW 6119 (Antique White)	2nd Campaign
6) Paint	Black		Very Thin Layer

7)	Paint	White		
8)	Paint	Black	SW 6992 (Inkwell)	Window Black-out
9)	Paint	White		
10)	Paint	Black		Very Thin Layer
11)	Paint	White		Current Layer

4. Casing

Layer		Color	Match	Notes
1)	Metal Substrate			
2)	Metal primer	Orange		
3)	Paint	Light Gray-Green	SW 6176 (Liveable Green)	Original Paint*
4)	Paint	Medium Gray	SW 7067 (Cityscape)	2nd Campaign
5)	Paint	Black		Window Black-out
6)	Paint	White		Current Layer

5. Metal Stool

Layer		Color	Match	Notes
1)	Metal Substrate			
2)	Metal primer	Orange		
3)	Paint	Light Gray-Green	SW 6176 (Liveable Green)	Original Paint*
4)	Paint	Medium Gray	SW 7067 (Cityscape)	2nd Campaign
5)	Paint	Black		Window Black-out
6)	Paint	White		Current Layer

6. Outer Stool

Layer		Color	Match	Notes
1)	High-Sand Plaster Substrate			
2)	Paint	Cream-White	SW 6119 (Antique White)	Original Paint*
3)	Dirt			
4)	Paint	Cream-White	SW 6119 (Antique White)	2nd Campaign
5)	Dirt			Heavy Layer
6)	Paint	Off-White		Current Layer

7. Side of Window Recess

Layer	Color	Match	Notes
1) High-Sand Plaster Substrate			
2) Primer	Gray		
3) Paint	Cream-White	SW 6119 (Antique White)	Original Paint*
4) Dirt			
5) Paint	Cream-White	SW 6119 (Antique White)	
6) Paint	White		
7) Dirt			Heavy Layer
8) Paint	White		Current Layer

8. Pipe/Railing

Layer	Color	Match	Notes
1) Metal Substrate			
2) Metal primer	Orange		
3) Paint	Light Gray-Green	SW 6176 (Liveable Green)	Original Paint*
4) Paint	Medium Gray	SW 7067 (Cityscape)	2nd Campaign
5) Paint	Black		Window Black-out
6) Paint	White		Current Layer

Diagram 1: Interior of Upper Arched Windows

INTERIOR

Area Sampled: Arena Lower West Elongated Windows (See Diagram 2)
Substrate: Metal

1. Hollow boxed-in casing

Layer	Color	Match	Notes
1) Metal substrate			
2) Dirt			
3) Primer	Orange		
4) Paint	Light Gray-Green	SW 6176 (Liveable Green)	Original Paint*
5) Dirt			
6) Paint	Medium Gray	SW 7067 (Cityscape)	2nd Campaign
7) Paint	Black	SW 6258 (Tricorn Black)	Window Black-out
8) Paint	White		Current Layer

2. Wire Grills Over Windows

Layer	Color	Match	Notes
1) Metal Subtrate			
2) Factory Primer	Black		
3) White			

3. Window Putty

Layer	Color	Match	Notes
1) Metal primer	Orange		
2) Putty (substrate)	Yellow		
3) Primer	Gray		
4) Paint	Black	SW 6258 (Tricorn Black)	Original Paint*
5) Paint	White		Current Layer

4. Side of Window Recess

Layer	Color	Match	Notes
1) High-Sand Plaster Substrate			
2) Paint	Cream-White	SW 6119 (Antique White)	Original Paint*
3) Dirt			
4) Paint	Cream-White	SW 6119 (Antique White)	2nd Campaign
5) Dirt			Heavy Layer
6) Paint	Off-White		Current Layer

5. Metal Stool

Layer	Color	Match	Notes
1) Metal Substrate			
2) Metal primer	Orange		
3) Paint	Light Gray-Green	SW 6176 (Liveable Green)	Original Paint*
4) Paint	Medium Gray	SW 7067 (Cityscape)	2nd Campaign
5) Paint	Black		Window Black-out
6) Paint	White		Current Layer

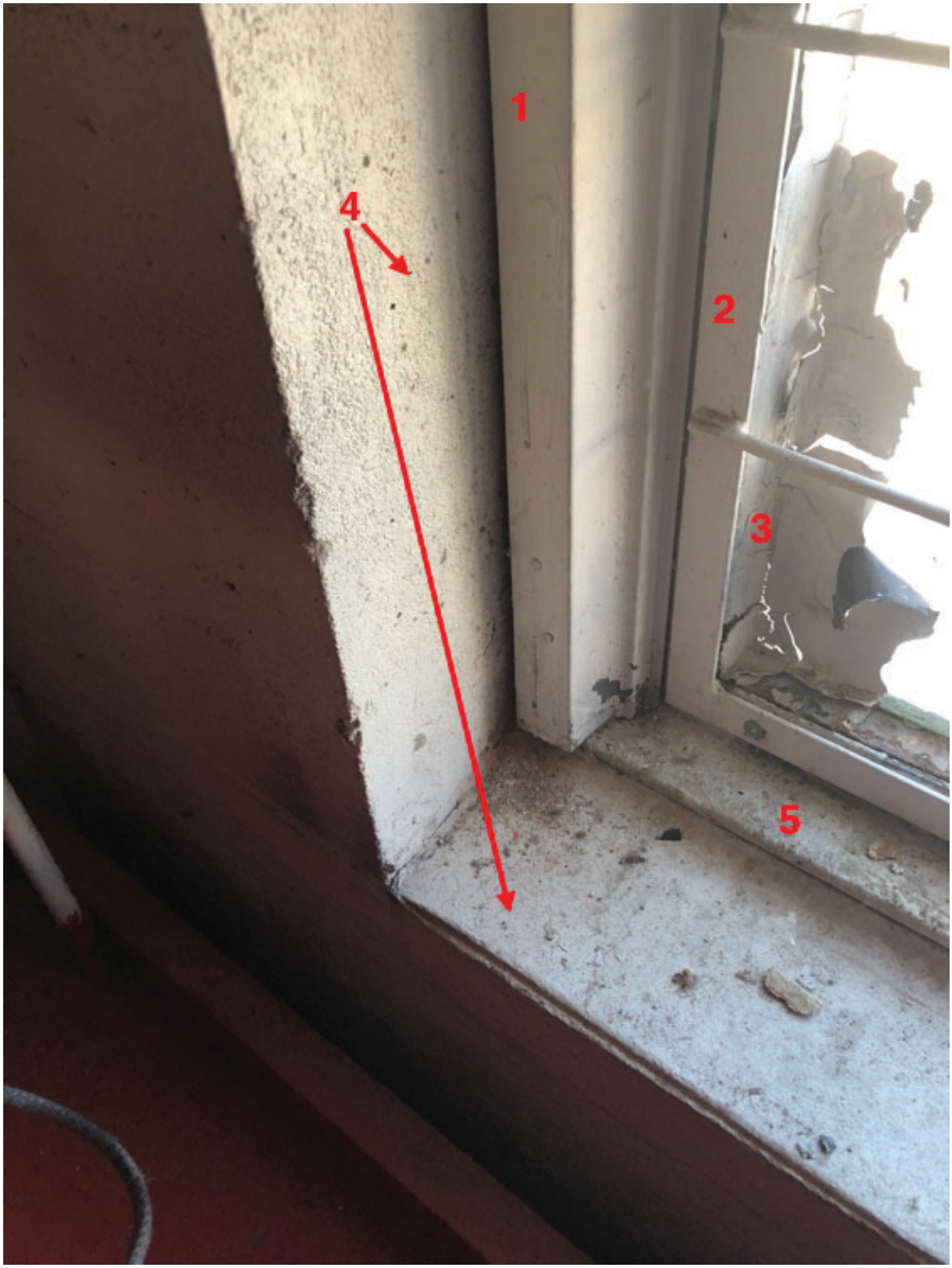


Diagram 2: Interior of Lower Elongated Windows

Area Sampled: Upper Superstructure: Rafters, Trusses, Sheathing, Etc (Diagram 3)
Substrate: Metal/Wood

1. Diagonal "H" Rafter Beams

Layer	Color	Match	Notes
1) Metal substrate			
2) Oxidation	Red-Brown (Rust)		
3) Primer	Bright Orange	SW 6887 (Navel)	
4) Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*

2. Horizontal "H" Beam Supports

Layer	Color	Match	Notes
1) Metal substrate			
2) Oxidation	Red-Brown (Rust)		
3) Primer	Bright Orange	SW 6887 (Navel)	
4) Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*

3. "T" Vertical Trusses

Layer	Color	Match	Notes
1) Metal substrate			
2) Oxidation	Red-Brown (Rust)		
3) Primer	Bright Orange	SW 6887 (Navel)	
4) Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*

4. Roof Sheathing

Layer	Color	Match	Notes
1) Wood Substrate	Lt Red-Brown		
2) Oil Stain	Med Red Brown	SW 3114-P (Warm Chestnut)†	
3) Heavy Soiling			

† Use Sikkens SRD 009 (Dk Oak) to match

Diagram 3: Upper Structural Members & Sheathing

INTERIOR

Area Sampled: Lower Stuctural Columns and Beams (Diagram 4)

Substrate: Metal

1. Vertical "H" Beams At Wall

Layer	Color	Match	Notes
1) Metal substrate			
2) Oxidation	Black		
3) Primer	Bright Orange	SW 6887 (Navel)	
4) Paint	Black	SW 6258 (Tricorn Black)	Original Paint*
5) Paint	Beige	SW 6085 (Simply Beige)	2nd Campaign
6) Paint	White		Current Layer

2. Diagonal "I" Beams

Layer	Color	Match	Notes
1) Metal substrate			
2) Primer	Bright Orange	SW 6887 (Navel)	
3) Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*
4) Dirt			
5) Paint	Deep Red	SW 6593 (Carol Bells)	Fragments
4) Paint	Bright Red	SW 2913 (Classy Red)	2nd Campaign
7) Paint	White		Striping

3. Upper Diagonal "H" Beams

Layer	Color	Match	Notes
1) Metal substrate			
2) Primer	Bright Orange	SW 6887 (Navel)	
3) Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*

4. Lower "H" Beam Columns

Layer	Color	Match	Notes
1) Metal substrate			

2)	Primer	Bright Orange	SW 6887 (Navel)	
6)	Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*
7)	Paint	Bright Red	SW 2913 (Classy Red)	2nd Campaign

Diagram 4: Interior Lower Structural Members

Area Sampled: Arena Walls West (Upper)
Substrate: Cement

1. Upper Wall

Layer	Color	Match	Notes
1) Cement	Gray		
2) Dirt			Heavy Soiling
3) Paint	White	SW 7566 (Westinghouse White)	Original Paint*
4) Dirt			
5) Paint	White	SW 7005 (Pure White)	

Area Sampled: Arena Walls West (Lower)
Substrate: Cement

1. Lower Wall

Layer	Color	Match	Notes
1) Cement	Gray		
2) Dirt			Heavy Soiling
3) Paint	White	SW 7566 (Westinghouse White)	Original Paint*
4) Dirt			
5) Paint	White	SW 7005 (Pure White)	

INTERIOR
Area Sampled: Southwest Transom (Diagram 5)
Substrate: Wood

1. Window Sash

Layer	Color	Match	Notes
1) Wood substrate			
2) Primer	Light Gray	SW 7065 (Argos)	Yellowed

3)	Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*
4)	Soiling			
5)	Paint	Black	SW 6993 (Black of Night)	2nd Campaign
6)	Paint	White		Current Layer

2. Muntins

Layer		Color	Match	Notes
1)	Wood substrate			
2)	Primer	Light Gray	SW 7065 (Argos)	Yellowed
3)	Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*
4)	Soiling			
5)	Paint	Black	SW 6993 (Black of Night)	2nd Campaign
6)	Paint	White		Current Layer

3. Lower Stop

Layer		Color	Match	Notes
1)	Wood substrate			
2)	Primer	Light Gray	SW 7065 (Argos)	Yellowed
3)	Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*
4)	Soiling			
5)	Paint	Black	SW 6993 (Black of Night)	2nd Campaign
6)	Paint	White		Current Layer

4. Frame Dividers

Layer		Color	Match	Notes
1)	Wood substrate			
2)	Primer	Light Gray	SW 7065 (Argos)	Yellowed
3)	Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*
4)	Soiling			
5)	Paint	White		Chalky 2nd Campaign
6)	Paint	White		Current Layer

5. Outer Convex Moulding

Layer	Color	Match	Notes
1) Wood substrate			
2) Primer	Light Gray	SW 7065 (Argos)	Yellowed
3) Paint	Medium Gray	SW 7067 (Cityscape)	Original Paint*
4) Soiling			
5) Paint	White		Chalky 2nd Campaign
6) Paint	White		Current Layer

Diagram 5: Southest Transom. Note Original Half-Light Doors Have Been Replaced

INTERIOR

Area Sampled: South Foyer
Substrate: Plaster and Brick

1. Upper Wall

Layer	Color	Match	Notes
1) Plaster substrate			
2) Paint	White	SW 7551 (Greek Villa)	Original Paint*

2. Lower Wall

Layer	Color	Match	Notes
1) Plaster substrate			
2) Paint	White	SW 7551 (Greek Villa)	Original Paint*
3) Paint	Deep Red	SW 7587 (Antique Red)	Current Layer*†

2. Glazed Brick Door Surround

Layer	Color	Match	Notes
1) Brick substrate	Cream/White		Glazed
2) Paint	White	SW 7551 (Greek Villa)	Original Paint*
3) Paint	Deep Red	SW 7587 (Antique Red)	Current Layer*

† Note 1: The red on the Foyer's Lower Walls and Door Surround appear to have been painted as part of the same painting campaign (No dirt layer was present between them).

Note 2: Traces of aluminum paint were found below the white layer. This is curious and may be the remnants of earlier signage.

PART 2: EXTERIOR

Area Sampled: Lower Narrow Windows (West Elevation)
Substrate: Metal

1. Sash

1)	Metal substrate			
2)	Factory Primer	Orange		
3)	Dirt			
4)	Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
5)	Dirt			
6)	Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
7)	Dirt			
8)	Paint	Light Gray		3rd Campaign
9)	Dirt			
10)	Paint	Light Gray-Brown		4th Campaign
11)	Paint	Off-White		Current Layer

2. Casing

Layer	Color	Match	Notes
1) Metal substrate			
2) Factory Primer	Orange		
3) Dirt			
4) Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
5) Dirt			
6) Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
7) Dirt			
8) Paint	Light Gray		3rd Campaign
9) Dirt			
10) Paint	Light Gray-Brown		4th Campaign
11) Paint	Off-White		Current Layer

Area Sampled: Upper Arched Windows (West Elevation)
Substrate: Metal

1. Sash

Layer	Color	Match	Notes
12) Metal substrate			
13) Factory Primer	Orange		
14) Dirt			
15) Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
16) Dirt			
17) Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
18) Dirt			
19) Paint	Light Gray		3rd Campaign
20) Dirt			
21) Paint	Light Gray-Brown		4th Campaign
22) Paint	Off-White		Current Layer

2. Casing

Layer	Color	Match	Notes
1) Metal substrate			
2) Factory Primer	Orange		
3) Dirt			
4) Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
5) Dirt			
6) Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
7) Dirt			

8)	Paint	Light Gray	3rd Campaign
9)	Dirt		
10)	Paint	Light Gray-Brown	4th Campaign
11)	Paint	Off-White	Current Layer

Area Sampled: Exterior Of Entrance Transom West Elevation, South End (Note: Windows Have Been Covered Over)
Substrate: Wood

1. Face

Layer	Color	Match	Notes
1) Wood substrate			
2) Dirt			
3) Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
4) Dirt			
5) Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
6) Dirt			
7) Paint	Off-white	SW 6091 (Reliable White)	
8) Paint	White		
9) Paint	Off-White		Current Layer

2. Dentils

Layer	Color	Match	Notes
1) Wood substrate			
2) Dirt			
3) Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
4) Dirt			
5) Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign

6)	Paint	Off-white	SW 6091 (Reliable White)	
7)	Paint	White		
8)	Paint	Off-White		Current Layer

3. Convex Molding

Layer		Color	Match	Notes
1)	Wood substrate			
2)	Dirt			
3)	Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
4)	Dirt			
5)	Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
6)	Paint	Off-white	SW 6091 (Reliable White)	
7)	Paint	White		
8)	Paint	Off-White		Current Layer

Area Sampled: Original South Doorway
Substrate: Wood (White pine)

1. Vertical Casing

Layer		Color	Match	Notes
1)	Wood Substrate	Yellow		Resinous
2)	Dirt			Heavy
3)	Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
4)	Dirt			Heavy
5)	Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint
6)	Dirt			Medium
7)	Paint	Warm Gray	SW 6170 (Techno Gray)	LBP (surface oxidized)
8)	Dirt			Light
9)	Paint	Beige	SW 6134 (Netsuke)	LBP (surface oxidized)

10)	Dirt			
11)	Paint	Light brown		LBP
12)	Paint	Off-White		Neg LBP, Heavy
13)	Paint	Crimson	SW 7586 (Stolen Kiss)	Thin (partial cover)
14)	Paint	White		Neg LBP, Medium
15)	Paint	White/Beige		Neg LBP, Current

2. Window Rail (Lower)

Layer		Color	Match	Notes
1)	Wood Substrate	Yellow		Resinous
2)	Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
3)	Dirt			
4)	Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
5)	Dirt			
6)	Paint	Light Ocher		
7)	Paint	Off-White		Neg LBP, Current

3. Muntins

Layer		Color	Match	Notes
8)	Wood Substrate	Yellow		Resinous
9)	Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
10)	Dirt			
11)	Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
12)	Dirt			
13)	Paint	Light Ocher		
14)	Dirt			
15)	Paint	Off-White		Neg LBP, Current

4. Dentils

Layer	Color	Match	Notes
1) Wood Substrate	Yellow		Resinous
2) Dirt			
3) Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
4) Dirt			
5) Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
6) Paint	White		LBP
7) Paint	Off-White Cream		LBP
8) Paint	Light Ocher		
9) Dirt			
10) Paint	White/Beige		Neg LBP, Current

5. Convex Molding

Layer	Color	Match	Notes
1) Wood Substrate			Resinous
2) Dirt			
3) Paint	Light Gray-Green	SW 6177 (Softened Green)	Original Paint*
4) Dirt			
5) Paint	Buff	SW 7691 (Biltmore Buff)	2nd Campaign
6) Paint	White		LBP
7) Paint	Off-White Cream		LBP
8) Paint	Light Ocher		
9) Dirt			
10) Paint	White/Beige		Neg LBP, Current

Diagram 6: Sample Locations On South Entrance Doorways