

**SELECTIVE EXTERIOR  
PAINT COLOR INVESTIGATION**

**Lake Avenue Bridge  
Greenwich, CT**



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## INTRODUCTION

Jablonski Building Conservation, Inc. was retained by the Merritt Parkway Conservancy to perform a selective paint color investigation of elements on the Lake Avenue Bridge of the Merritt Parkway in Greenwich, CT. Conservator Jennifer Kearney took twenty-four samples from elements of the span, railings, piers and columns. Of those samples, sixteen were analyzed for the presence of historic finishes.

## FINISH COLOR INVESTIGATION METHODOLOGY

Samples measuring approximately three to six millimeters in length were removed from the identified areas using a scalpel for further examination. A minimum of three paint chip samples were taken from each element. In most cases, *in situ* cratering and close-up examination of the surfaces was performed to quickly determine the status (degree of surviving original paints) and complexity of the finishes before sample collection.

The samples were broken to reveal fresh cross-sections. Each sample was examined in normal reflected light, under illumination conditions that simulate daylight (fiber optic illuminator) for the purpose of color-corrected stratigraphy identification. The samples were examined microscopically during the investigation using a Nikon Stereo Zoom microscope with 10X-63X power.

All layers have been recorded using a descriptive color name rather than a standardized color notation system. This was done to document the seriation of the samples for comparative purposes prior to the identification of early layers using both a standardized universal color system (Munsell) and commercial paint color systems (Benjamin Moore).

Each paint layer was identified as a primer or a finish coat. While primers did not usually affect the color of the finish coat, they were important for the opacity and richness of the finish.

The sheen of each layer was identified during microscopic analysis. The sheen match was based on a four-point scale ranging from the lowest amount of sheen (flat) to the highest surface sheen (glossy). Flat paint has no surface sheen when examined under the microscope. Semi-flat paint has some surface sheen and could be compared to modern eggshell or satin finishes. Semi-glossy paint has moderate surface sheen. Glossy paints are heavily oiled and glossy glazes are typically translucent.

Under illumination conditions that simulate natural daylight, the original finish layers were matched to a commercially available paint system. A chromochronology and photomicrograph of each sample is included in Appendix A of this report.

**EXTERIOR PAINT SAMPLE LOCATIONS**  
**Lake Avenue Bridge**

<b><u>Sample #</u></b>	<b><u>Description</u></b>
LAB-01	Field behind Spandrel Panels
LAB-02	Spandrel Panel – Torch Flame
LAB-03	Spandrel Panel – Vines
LAB-04	Spandrel Panel – Torch Handle
LAB-05	Spandrel Panel – Shield Border
LAB-06	Spandrel Panel – Shield
LAB-07	Spandrel Panel – Leaves
LAB-08	Spandrel Panel – Grapes
LAB-09	Spandrel below Ornamental Panels
LAB-10	Railing Post
LAB-11	Railing Post – Bolt Cover
LAB-12	Pier Panel – Urn Base
LAB-13	Pier Panel – Urn Handle
LAB-14	Pier Panel – Rosette below Urn
LAB-15	Pier Panel – Urn Field
LAB-16	Pier Panel – Field Below Urn
LAB-17	Pier Panel – Vines
LAB-18	Pier Panel – Grapes
LAB-19	Pier Panel – Base
LAB-20	Pier from Lake Avenue Street Level
LAB-21	Columns
LAB-22	Railing Post from Lake Avenue Street Level
LAB-23	Railing from Lake Avenue Street Level
LAB-24	Railing Rosette from Lake Avenue Street Level



LAB-08

LAB-07

LAB-01

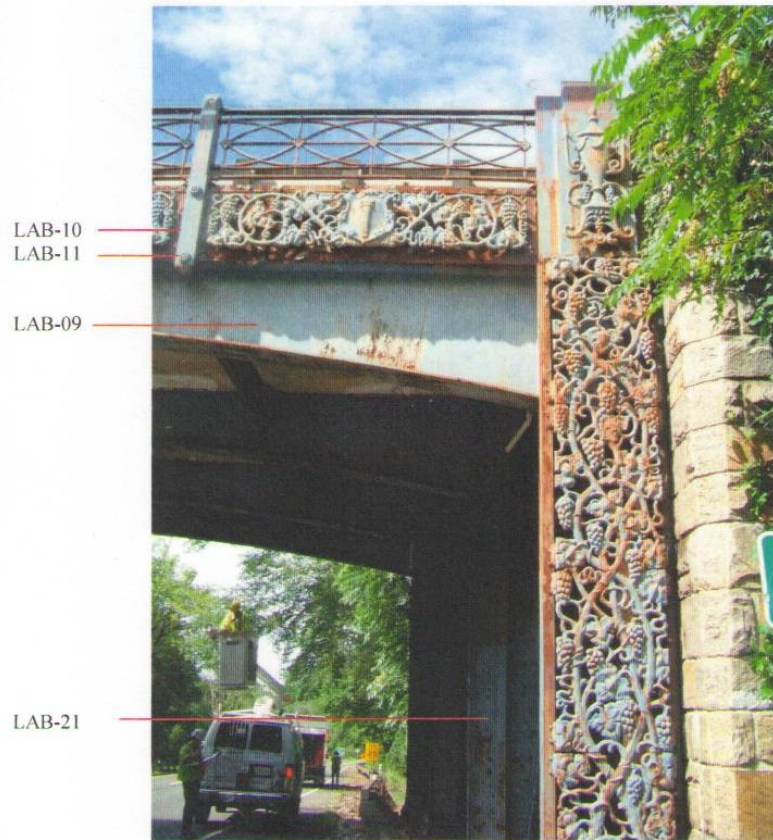
LAB-05

LAB-02

LAB-06

LAB-03

LAB-04



- LAB-13
- LAB-15
- LAB-12
- LAB-16
- LAB-14
- LAB-17
- LAB-18





LAB-19



LAB-20

LAB-23

LAB-24

LAB-22



## FINDINGS

Several elements along the street level of the bridge appear to have been previously stripped and show little to no evidence of historic finishes. Many of these elements are bolted together and could have been removed to an off-site location for paint removal which would account for the relatively consistent lack of early finishes. In general there is significant corrosion of the substrate which has discolored many of the early finish layers, where extant. Given the level of deterioration, it is possible that several sampled areas have lost early decorative finishes.

The exterior finishes on the Lake Avenue Bridge consist of a black finish for the major structural elements (Munsell N1). These elements include the spandrels behind the ornamental panels and the columns. This finish was matched by Benjamin Moore Ready Mixed Black.



Finish

Structural elements

Benjamin Moore  
Ready Mixed Black

Semi-gloss sheen

The ornamental elements were finished with a grayish brown (Munsell 10YR 3/2). On some elements this layer was applied as a base coat and a layer of gold-colored paint was applied over to highlight specific details on the ornamental panels. In general, the vines and borders of the ornamental panels were finished with the grayish brown, as well as the railings at street level. This finish was matched by Benjamin Moore Historic Color 68.

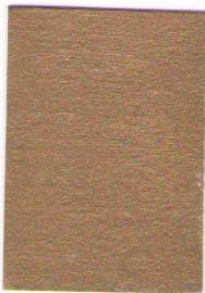
Finish

Ornamental panels: Vines, borders, bases  
Railings

Benjamin Moore  
HC-68

Semi-gloss sheen

The grapes, shields, urns, torches, bolt covers, and rosettes on the ornamental panels were finished with gold-colored paint. In some locations, this gold finish may have flaked off from the grayish brown base color. Portions of the samples appear to be covered with a yellow varnish, although this layer is heavily deteriorated.

Finish

Ornament: Grapes, Urns, Shields, Torches, Bolt Covers, Rosettes

Gold Metallic Paint

Semi-gloss sheen

Subsequent finishes used a silver-colored paint on the majority of these elements with a dark green finish for the structural and contrasting ornamental elements.

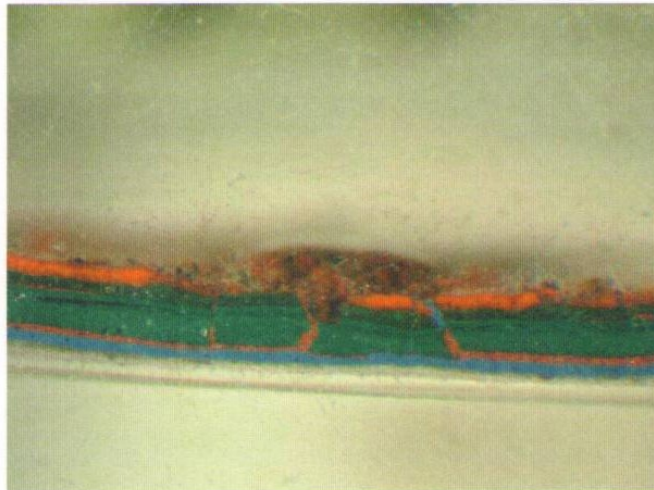
APPENDIX A

**CHROMOCHRONOLOGIES**

**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-01  
 LOCATION: Field behind Spandrel Panels  
 SUBSTRATE: Iron

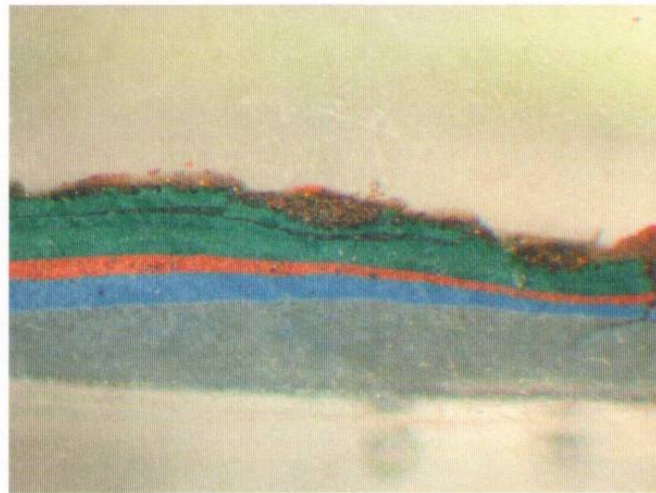
Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. reddish brown	Primer	Semi-gloss			
2. black	Finish	Semi-gloss		N1	BM RM Black
3. orange	Primer	Semi-gloss			
4. dark green	Primer	Semi-gloss			
5. dark green	Finish	Semi-gloss			
6. reddish brown	Primer	Semi-gloss			
7. moderate green	Primer	Semi-gloss			
8. moderate green	Primer	Semi-gloss			
9. moderate green	Finish	Semi-gloss			
10. reddish orange	Primer	Semi-gloss			
11. blue	Primer	Semi-gloss			
12. blue	Finish	Semi-gloss			



**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-04, LAB-06, LAB-11  
 LOCATION: Spandrel Panel – Torch Handle  
 Spandrel Panel – Shield  
 Railing Post – Bolt Cover  
 SUBSTRATE: Iron

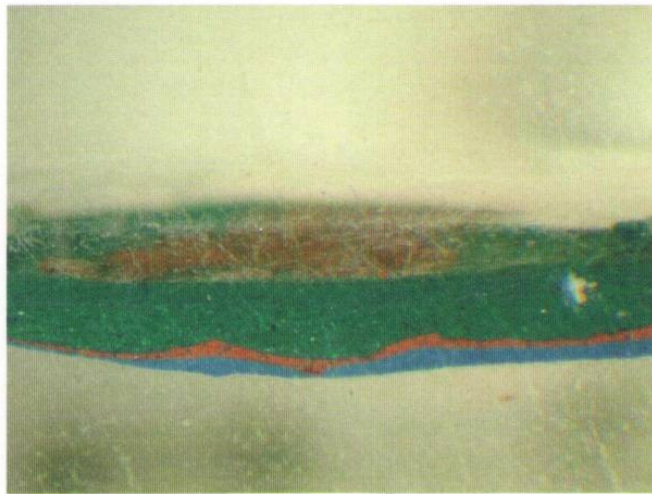
Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. reddish brown	Primer	Semi-gloss			
2. grayish brown	Base	Semi-gloss	Waxy	10YR 3/2	BM HC-68
3. gold metallic	Finish	Metallic			
4. yellow	Varnish	Glossy			
5. dark green	Primer	Semi-gloss			
6. dark green	Finish	Semi-gloss			
7. silver	Finish	Metallic			
8. moderate green	Primer	Semi-gloss			
9. moderate green	Finish	Semi-gloss			
10. orange	Primer	Semi-gloss			
11. blue	Finish	Semi-gloss			



**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-07, LAB-08  
 LOCATION: Spandrel Panel – Leaves  
 Spandrel Panel – Grapes  
 SUBSTRATE: Iron

Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. orange	Primer	Semi-gloss			
2. grayish brown	Base	Semi-gloss		10YR 3/2	BM HC-68
3. dark green	Primer	Semi-gloss			
4. dark green	Primer	Semi-gloss			
5. dark green	Primer	Semi-gloss			
6. dark green	Finish	Semi-gloss			
7. moderate green	Primer	Semi-gloss			
8. moderate green	Finish	Semi-gloss			
9. orange	Primer	Semi-gloss			
10. blue	Finish	Semi-gloss			

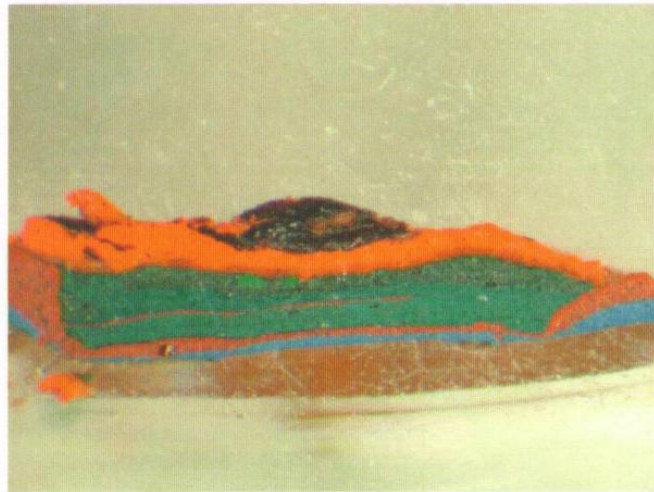


**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-09, LAB-21  
 LOCATION: Spandrel below Ornamental Panels  
 Columns  
 SUBSTRATE: Iron

Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. black	Finish	Semi-gloss		N1	BM RM Black
2. orange	Primer	Semi-gloss			
3. dark green	Primer	Semi-gloss			
4. dark green	Finish	Semi-gloss			
5. dark red	Primer	Semi-gloss			
6. moderate green	Primer	Semi-gloss			
7. moderate green	Primer	Semi-gloss			
8. moderate green	Primer	Semi-gloss			
9. moderate green	Finish	Semi-gloss			
10. orange	Primer	Semi-gloss			
11. blue	Finish	Semi-gloss			

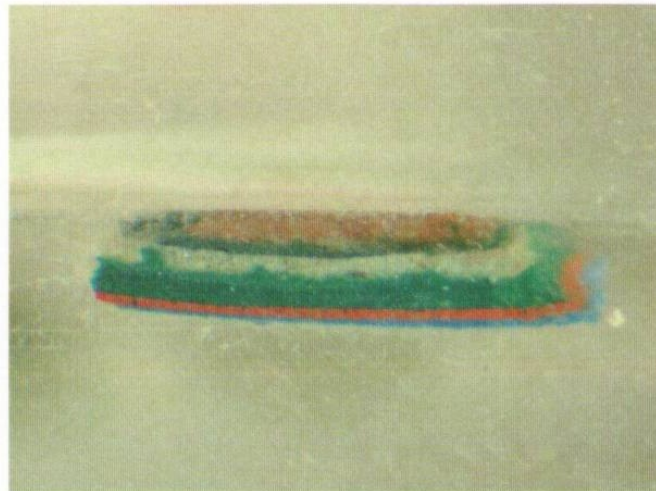
Note: Layer 5 only appears on Sample LAB-21



**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-10  
 LOCATION: Railing Post  
 SUBSTRATE: Iron

Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. orange	Primer	Semi-gloss			
2. grayish brown	Finish	Semi-gloss		10YR 3/2	BM HC-68
3. dark green	Finish	Semi-gloss			
4. grayish white	Finish	Semi-gloss			
5. moderate green	Primer	Semi-gloss			
6. moderate green	Primer	Semi-gloss			
7. moderate green	Primer	Semi-gloss			
8. moderate green	Finish	Semi-gloss			
9. orange	Primer	Semi-gloss			
10. blue	Finish	Semi-gloss			

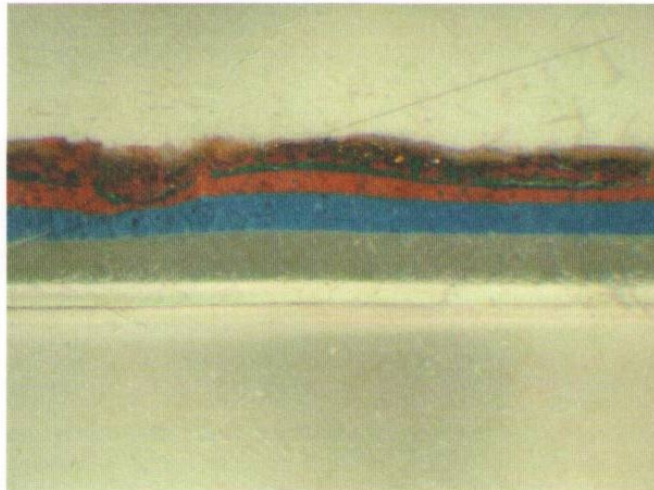




**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-12, LAB-15, LAB-18  
 LOCATION: Pier Panel – Urn Base  
 Pier Panel – Urn Field  
 Pier Panel – Grapes  
 SUBSTRATE: Iron

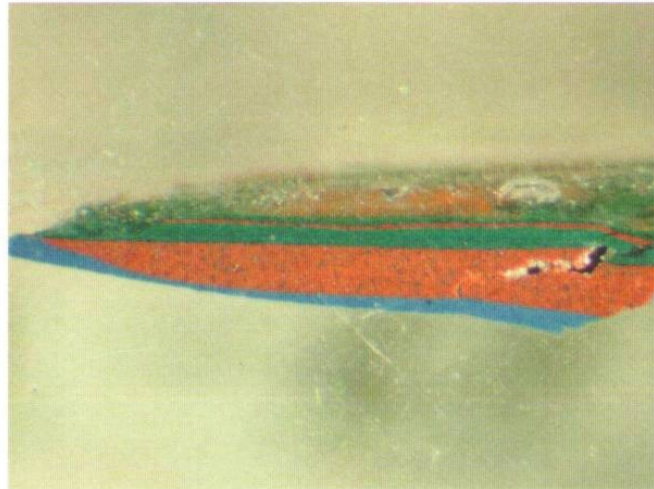
Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. orange	Primer	Semi-gloss			
2. grayish brown	Base	Semi-gloss		10YR 3/2	BM HC-68
3. gold	Finish	Metallic			
4. yellow	Varnish	Glossy			
5. dark red	Primer	Semi-gloss			
6. dark green	Finish	Semi-gloss			
7. silver	Finish	Metallic			
8. moderate green	Finish	Semi-gloss			
9. orange	Primer	Semi-gloss			
10. blue	Finish	Semi-gloss			



**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-14  
 LOCATION: Pier Panel – Rosette below Urn  
 SUBSTRATE: Iron

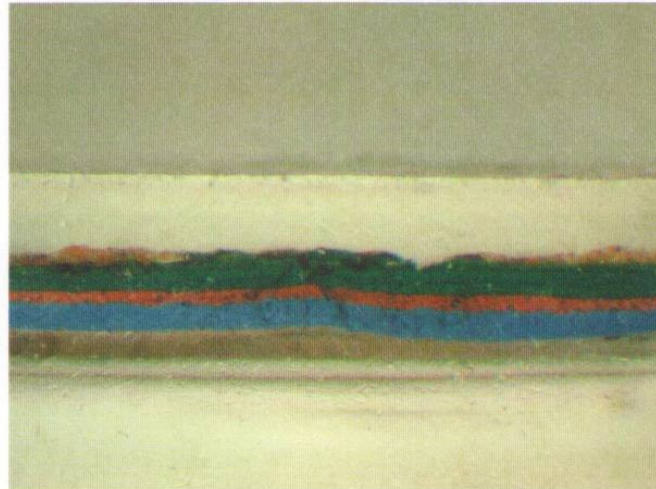
Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. orange	Primer	Semi-gloss			
2. grayish brown	Finish	Semi-gloss		10YR 3/2	BM HC-68
3. dark green	Finish	Semi-gloss			
4. dark red	Primer	Semi-gloss			
5. moderate green	Primer	Semi-gloss			
6. moderate green	Primer	Semi-gloss			
7. moderate green	Finish	Semi-gloss			
8. orange	Primer	Semi-gloss			
9. blue	Finish	Semi-gloss			



**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-17, LAB-19  
 LOCATION: Pier Panel – Vines  
 Pier Panel – Base  
 SUBSTRATE: Iron

Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. orange	Primer	Semi-gloss			
2. grayish brown	Finish	Semi-gloss	Waxy	10YR 3/2	HC-68
3. dark green	Primer	Semi-gloss			
4. dark green	Primer	Semi-gloss			
5. dark green	Finish	Semi-gloss			
6. moderate green	Primer	Semi-gloss			
7. moderate green	Finish	Semi-gloss			
8. orange	Primer	Semi-gloss			



**PAINT CHROMOCHRONOLOGY AND COLOR MATCH**

SAMPLE NUMBER: LAB-20  
LOCATION: Pier from Lake Avenue Street Level  
SUBSTRATE: Iron

Color	Coat	Sheen	Characterization	Munsell Match	Commercial Match
1. orange	Primer	Semi-gloss			
2. orange	Primer	Semi-gloss			
3. blue	Finish	Semi-gloss			

Note: Original layers lost.

