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## THE TREATMENT AND REINSTALLATION OF A CERAMIC TILE FIREPLACE

Shelley Reisman Paine

### Abstract

This article documents the process required to prepare a ceramic tile fireplace surround made in 1911 for John. J. Meacham by Frederick and Agnes Rhead. The tiles were treated and mounted for the *University City Ceramics: Art Pottery of the American Woman's League* exhibition at the Saint Louis Art Museum, Saint Louis, MO, in June 2004.

The surround was constructed from 280 blue-green glazed earthenware tiles with a landscape frieze of large square incised tiles with multicolor glazes. In 2003, the tiles were removed from the Meacham house and brought to the St. Louis Art Museum. During this process, each tile was numbered and a scale drawing was made of the original installation. The tiles varied in size and weight, but most problematically for the treatment, in thickness.

To prepare the tiles for exhibition, multiple decisions involving the curator, conservator, designer, preparator, fabricators and manufacturers were required to create a safe, stable, removable and aesthetically pleasing installation. This report documents the process required to stabilize, clean, compensate for losses and mount the tiles. The mounting process included applying isolation layers of B-72, developing a process to level each tile, attaching the tiles to a custom honeycomb panel with epoxy, and grouting the surround with custom mortar.

### Introduction

The Meacham fireplace was created by ceramicists Frederick & Agnes Rhead in 1911 in University City, a suburb of St. Louis, Missouri, and is now in the collection of the St. Louis Museum of Art. The tiles were treated and mounted for the exhibition *University City Ceramics - Art Pottery of the American Woman's League*. Conservation and reinstallation of the fireplace took six months, involved the treatment of 280 ceramic tiles and required the development of a mounting system that was both portable and allowed each individual tile to be removed at a later date. The process was complicated by the variable thickness of the handmade tiles, up to 1/2" difference, and by the weight of the tiles, 170 pounds.

### History

Frederick Rhead came to America in 1902 from a renowned family of English ceramicists. Between 1910 and 1911 he and his wife Agnes taught at the Art Academy of the People's University, part of the American Woman's League. Both the League and the University were founded by Edward Gardner Lewis, a magazine publisher, entrepreneur and amateur potter, to foster women's education and participation in the activities of American life. The League offered art classes in response to the popularity of the Arts and Crafts Movement. The University was a

free correspondence educational system for women whose sold Lewis's magazines to gain membership in the American Woman's League. While most students were taught by correspondence, Rhead taught the honor students at the academy in University City, MO.



Figure 1. Frederick Rhead in the Art Academy classroom in University City, MO

Ultimately, Lewis's business ventures failed and the University closed after five years. Rhead left after making the Meacham fireplace surround, and went on to work in many potteries before becoming the art director for the Homer Laughlin China Company, the largest American pottery at the time. He worked there until his death in 1942. During his time at the pottery, he oversaw the development of many types of wares including the colorful Fiestaware.



Figure 2. Frederick Rhead fireplace in the Meacham house, University City, MO

While at University City, the Rheads created sets of tiles that were used as pictorial friezes for fireplace surrounds. A set of ten landscape tiles and 270 matte blue/green tiles were made for John J. Meacham and placed in the living room inglenook of his home in University City. The Meacham fireplace demonstrates their interest in simple lines, incised decoration and matte glazes with naturalistic and stylized motifs.

## Treatment

The treatment project took six months and was completed in three different stages. It began in St. Louis in 2003 when the museum staff removed the surround from the Meacham house and brought it to the St Louis Art Museum. The tiles were faced with Jlar tape, an acrylic adhesive on a clear polyethylene base, and the mortar cut away using a diamond wheel. During this process, each tile was numbered and a scale drawing was made of the original installation. It was then delivered to Shelley Reisman Paine Conservation (SRPC) in Nashville. Once the tiles were treated and installed on their new honeycomb support panels, they were returned to St. Louis for grouting and installation in the gallery

While there were many choices for treatment materials and methods, for this project the need for tiles to be put on lightweight portable supports and to be individually removable ultimately drove many of the decisions.

The majority of the tiles were structurally stable. However, six tiles were broken into two fragments and 260 individual areas of loss to the obverse on 180 tiles revealed the interior clay body. Approximately 30 tiles had complete or nearly complete loss of the fired surface on the reverse. In addition, approximately 80% of the tiles had moderate or major accumulations of the bedding mortar that had not been removed after deinstallation. One tile was missing and had been replaced with a darker blue tile. Minor and moderate pits in the glaze overall appeared to be from fabrication. There were a variety of minor black and brown stains and accretions overall and a thin coherent layer of brown/black smoke residue. The black smoke residue also infused the exposed clay body and grout creating a dark charcoal color.



Figure 3a. Tiles from lower left side of fireplace, before treatment, obverse.



Figure 3b. Tiles from lower left side of fireplace, before treatment, reverse.

Figures 3a and b show the condition of the tile. They are from the lower left corner of the fireplace and include the artists' signature in a tile at the bottom row.

Conservators at the St. Louis Art Museum removed the gross accumulations of soot after the tiles were removed from the Meacham home. Once the tiles reached Nashville, SRPC conservators removed the remaining bedding mortar and cleaned the tiles to remove the embedded soot. All six unglazed surfaces were given two applications of a barrier coating of 17% Paraloid B-72, methylmethacrylate adhesive, dissolved in acetone applied by brush. The Paraloid B-72 acts as a barrier coat to permit later separation of the tiles from the epoxy adhesive and panel if necessary. Podany (et al. 2001) discussed the use of B-72 as a structural adhesive and as a barrier within structural adhesive bonds and clearly identified the need to use acetone as the solvent in the coating. The use of other solvents renders the glass transition temperature too low for this application. After coating, areas of loss were filled with Milliput epoxy putty and the fills were toned with a base coat of Liquitex acrylic emulsion paint applied through an airbrush. The color of each fill was then adjusted with Golden MSA colors. The use of organic solvents was avoided as much as possible to prevent any absorption into the barrier coat.



Figure 4 – Tiles from left side of fireplace after treatment, obverse.

### Panel specifications

Three 1" thick aluminum honeycomb panels were chosen as the support. These are lightweight yet strong enough both to stay flat and to support the aggregate weight of the tiles, adhesive and grout in a vertical orientation: the total weight after grouting is approximately 400 pounds. The panels were custom-made by MuseumServices Corporation to accommodate the specific requirements of the reinstallation. An integral 3" x 1" aluminum tube extended around the perimeter of the top panel and two sides of the two lower panels to reinforce the edges for the exhibit installation hardware.

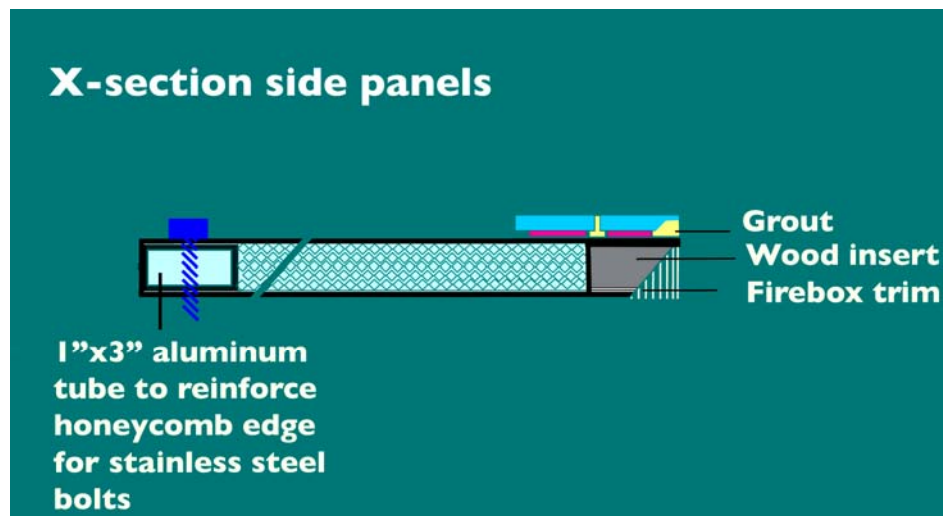


Figure 5. Cross section of side panels

The tiles at the perimeter of the firebox were designed with a beveled reveal under the outermost edge. This bevel created a gap to hold grout that would obscure attachment of the firebox to the surround. Therefore, the interior edge of the lower honeycomb panels included a 45-degree miter and a wood closeout to conceal attachment of the faux firebox in the exhibit installation.

### **Tile installation: Leveling**

Two hundred twenty 3" x 5" and ten 10" x 10" tiles were attached to the panels before grouting and installation. Each tile was leveled separately because none of the handmade tiles were the same thickness. In fact, there was a 1/2" difference between the thickest and thinnest tiles. The leveling process involved the use of wax cones to adjust the height of each tile. Each tile was first placed upside down on a flat board covered with Mylar. Cones of a hard synthetic wax mixture were formed and placed on the surface in regular intervals. The wax chosen was Daige BB9, with a melting point of 180 degF and a softening point of 140 degF. Release paper was placed on each cone before inverting and using pressure to level the tile.



Figure 6. Wax spacers with release paper.



Figure 7. Compressing a tile.

The tiles had to be leveled to match the thickness of the thickest tile. Therefore, each row of tiles was leveled using a carpenter's level that spanned side rails replicating the thickness of the thickest tile. During this process, the cones were compressed into "stilts" that support the tile at the correct height.



Figure 8. Leveling a row.

### **Tile installation: Adhering**

The next step was to adhere the tiles to the honeycomb panels. E.V. Roberts epoxy 4807 and curing agent RF 61 in a ratio of 2:1 were blended with 2% glycerol and fumed silica to get a strong enough adhesive for the project. The glycerol was used to speed the thickening of the mixture at the suggestion of Kevin Zilvar, of E.V. Roberts. The glycerol has 3 hydroxyl groups that form an ionic bond with the Cabosil M5 thus creating a thicker paste more quickly. The adhesive was put in paper cones and piped between the wax stilts.



Figure 9. Epoxy piped between the wax stilts.



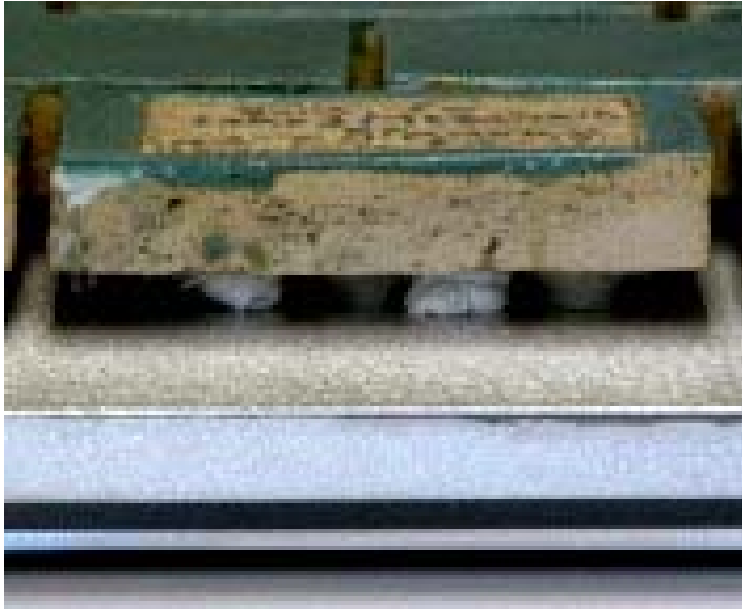


Figure 10. Attachment to the honeycomb panel.

The tiles were then inverted and oriented on the panels. A photo of the surround was used as a reference to recreate their original orientation.

The panels were then crated, picked up by the Museum and returned to St. Louis. There were several reasons to send the panels before grouting. The grout would add significant weight and take 7 days to cure to 90%. Also, moving the tiles prior to grouting prevented the possibility that the grout would crack from exposure to vibration during transit.

### **Tile installation: Grouting**

Once back in St. Louis, the tiles were prepared for grouting and exhibit installation. The process began by applying the Daige wax to the bottom edge of the top panel and the top edge of the two bottom panels. This wax “seam” prevented the grout from adhering to the metal wall support and will help facilitate later separation after the exhibition ends.

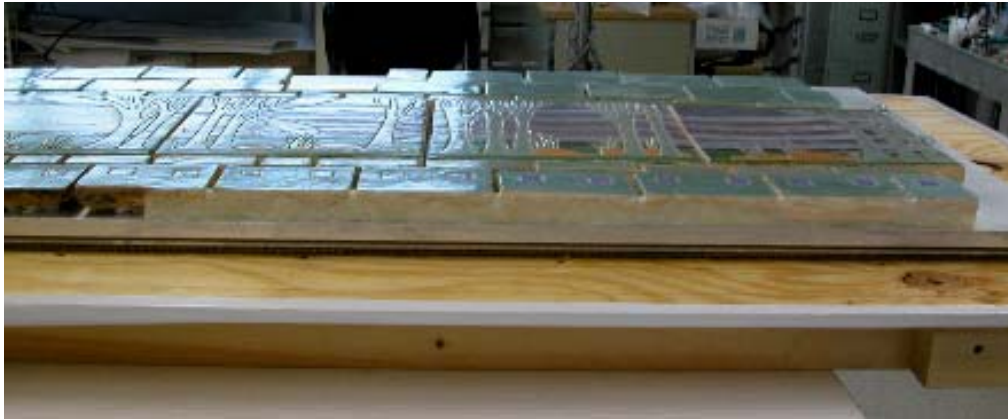


Figure 11 Waxed edge that corresponds to the lower left panel

Traditional grout will not adhere to aluminum. Therefore, Edison custom grout Spec-Joint 46 #10324 with admixture Restoration Latex RL Series was custom mixed to match the original grout texture and color. These materials will adhere to both the B-72 and the aluminum panel. A coating on the obverse of the tile as protection from abrasion during grouting was considered but not carried out for two reasons. First, the inpainting was extensive and had to be done in Nashville. Also, there was concern that during removal organic solvents might be absorbed into the B-72 coating and weaken the barrier film. In the end, there was no apparent abrasion of the tile surface although some grout did penetrate the pits in the tiles. This was removed with no difficulty.



Figure 12. Lower left panel finished and ready to install.

The Museum staff set the hearth in a reinforced bed of leveling mortar and then attached the hearth to the honeycomb panel with the same epoxy used to set the tile.

### Panel installation

There were two primary goals for the installation. First, that the weight of the tile was properly supported, and second, that the original appearance of the surround was correctly interpreted for the exhibition.

The honeycomb panels were designed to attach to the exhibit wall in two ways. First, a series of lag screws and bolts secured the perimeter of each panel to an exhibit wall reinforced with plywood. Second, each panel rested on an angle iron support, attached to the exhibit wall, to distribute the weight of the object. To be certain that the panels remained vertical, the rear edge of each panel was designed with a 3/8" chamfer to accommodate the curve of the angle iron. The thickness of the angle iron is the same as the thickness of the mortar line in the surround. Therefore, the angle iron provided a space for the seam between panels to be grouted. The museum staff then installed a faux surround and firebox created to approximate the original fireplace.

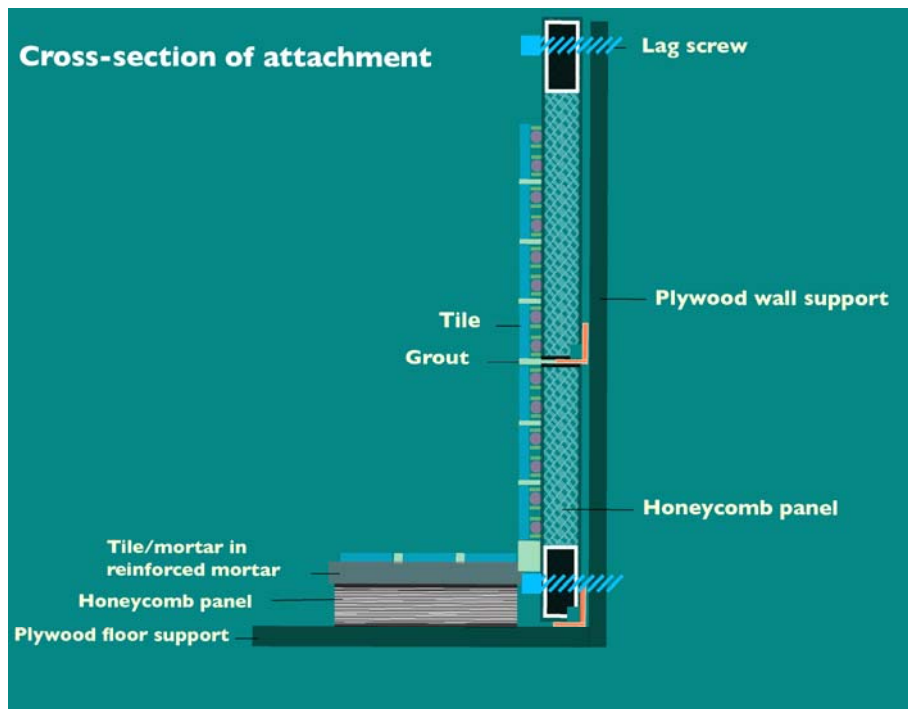


Figure 13. Cross section of attachment.



Figure 14. Panels installed.



Figure 15. Panels installed with surround.

The treatment and installation of the *Rhead Fireplace Surround* was a successful conservation project. It required the use of interesting techniques and materials to create a reversible yet believable installation.

### **Acknowledgements**

Diane Burke, former object conservator at the St. Louis Art Museum called to ask if the author would conserve the Meacham fireplace. This phone call was the first of many to staff at the St. Louis Art Museum and the beginning of a terrific collaboration. The author would like to thank them all: Diane Burke, Suzanne Hargrove, Zoe Perkins, Peter Wollenberg, David Conradsen, Linda Thomas, Jeanette Fausz, Sheba and Paul Haner, Jeff Wamhoff and Stephen Yusko. Thanks are also due to Kevin Zilvar, E.V.Roberts Adhesive for his technical assistance; Peter Mecklenburg for creating very intricate honeycomb panels; Andrew Lins, conservator, Philadelphia Museum of Art, and Jerry Podany, conservator, Getty Museum, for their support. This project could not have been completed with out the skillful assistance of Patty Grewe-Mullins, assistant conservator at SRPC and Regina Grybos, conservation intern at SRPC.

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David Conradsen and Ellen Paul Denker, *University City Ceramics: Art Pottery of the American Woman's League*, Saint Louis Art Museum, St. Louis, MO 2004

### **Suppliers**

Epoxy:

E.V Roberts, 18027 Bishop Avenue, Carson, CA, 90746-4019, (800) 374-3872,  
(www.e.v.roberts.com)

Aluminum panel:

MuseumServices Corporation, 1107 East Cliff Road, Burnsville, MN 55337-1514 ,  
(800) 672-1107, (www.museumservicescorporation)

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