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Condition Assessment & Treatment Recommendation

Breakfast Room Mural
Coe Hall, Planting Fields Arboretum SHP
Oyster Bay, New York



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Division for Historic Preservation
New York State Office of Parks, Recreation & Historic Preservation
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INTRODUCTION

On January 10th and 11th, 2012, Erin Moroney and Mary Betlejeski examined the breakfast room mural at Coe Hall, Planting Fields Arboretum SHP. The purpose of the visit was to re-assess the condition of the mural and to determine if any patterns of deterioration could be identified. Photographs of the mural taken in 2007 were used to determine the progression of the deterioration. An infrared camera and moisture meter were used to measure moisture and temperature within the walls. This site visit was one component of an extensive study of the mural (and the room) to determine the best treatment.

The Breakfast Room Mural has been failing since it was first created in the 1920's. The original artist Robert Winthrop Chanler was even called back to make repairs soon after the mural was finished. Since then the mural has undergone at least two major conservation efforts, the last in the 1980's.

Investigations have identified two primary causes for the on-going failures of the mural's structure: artists technique and environmental conditions.



Breakfast Room c. 1950's. Prior to conservation.

(1) Artist Technique

The on-going failure of the mural can be partially attributed to inherent problems due to artists technique. The built-up surface of the mural relies on the layering of plaster, gesso and paint (and gilding). The mural is failing at the interface of the plaster and gesso layers. The surface of the finish plaster appears to be too smooth to allow the gesso to properly adhere. In localized areas the gesso also appears to be under bound (powdery) resulting in detachment and paint loss.

Extensive testing of consolidants (NCPTT grant 2010)¹ revealed that the gesso layer acts as a barrier that prevents the consolidant (adhesive) from reaching the point of detachment. As a result, consolidant can only be locally introduced where cracking and detachment have already occurred. The consolidant must be meticulously introduced along existing cracks, directly under areas of flaking or injected into pockets of blind cleavage.

At this time, there is no conservation treatment that can prevent future cracking or detachment. The mural will require on-going treatment as cleavage and cracking develops. But as more and more of the surface is treated the rate of deterioration should be reduced, if environmental conditions remain stable.



Breakfast Room 2012. Detail of detachment. Gesso layer has detached from plaster.

¹Nanotechnology & Materials Testing: Using Nanoparticles to Tag Consolidants to Determine Depth of Penetration. The research was conducted to find a method of evaluating the performance of consolidants. The project was funded by a grant for the National Center for Preservation Training and Technology and OPRPH.

(2) Environmental Conditions:

Overtime poor environmental control in the Breakfast Room has resulted in dramatic swings in temperature and humidity. This resulted directly in accelerated deterioration including cracking and flaking of the mural between the plaster and gesso interface.

The building's original design and construction offered only limited temperature control and no humidity control. Given the extensive amount of glass along the two exterior walls, the breakfast room was especially vulnerable to rapid and frequent changes in temperature due to infiltration and convection (both heat loss and solar gain). The study completed by Cunningham/Adams in 1998 concluded that actual conditions of temperature and humidity in the breakfast room were much more egregious than had been expected and that the mural didn't require exceptionally precise climate control it only required substantially better climate control. (The criteria for precise climate control established by ASHARE for museum collections generally stipulate constant maintenance of 50% RH at 70 degrees F.)

The HVAC system that was installed in 2003 was designed to significantly improve the ability to control temperature and humidity within the breakfast room but without requiring strict adherence to the ASHARE standard. This system provides heating, cooling, dehumidification and (steam) humidification with a single zone dedicated to the breakfast room. The breakfast room is also the only space served by the HVAC system that includes humidification. The ability to isolate the breakfast room from other interior spaces and the HVAC system's single-zone capability allows for unique set-points for regulating temperature and relative humidity. These set-points were originally designed to maintain relatively stable humidity within a range of between 40% and 55% while allowing temperature to fluctuate from roughly 55 to 76 degrees F seasonally. We could not determine if these set-points are currently in effect.

Exterior storm windows, containing low-E and solar reflecting glazing, were installed to reduce infiltration and convection at the large windows. The installation of black-out shades and insulating curtains was designed to further reduce convection heat loss and solar heat gain as well as reduce the effects of visible light damage on the mural. Installation of both the storm windows and the black-out curtains were funded in part by a grant from the Institute of Museum and Library Science.

Rapid or sharp changes in humidity cause significant damage to the mural as a result of swelling and contraction of the plaster and gesso (which are both hygroscopic materials). Extremely low RH (generally below 20-25%) also has a desiccating effect on gesso that can cause the material to become powdery and disintegrate. The HVAC system, storm windows, curtains and interior doors are complimentary parts of the room's climate control system that need to work in unison to achieve the best performance at the least energy cost.

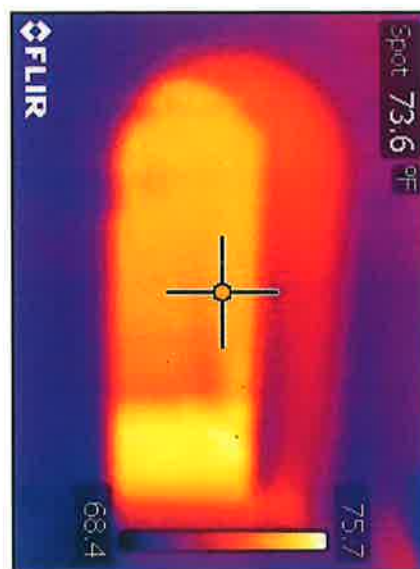
- | | |
|--|----------------------------------|
| • Dedicated HVAC System for breakfast room. | Cost: \$80,000—\$115,000* |
| • Fabrication & Installation of Custom Storm Doors & Windows | Cost: \$87,450.00* |

*Projects supported by the New York State Office of Parks, Recreation & Historic Preservation, the Plantings Fields Foundation and an Institute of Museum and Library (IMLS) Grant.

OBSERVATIONS:

The mural has continued to deteriorate since it was last surveyed in 2007. In the last five years, many of the areas of flaking paint have enlarged and new sections have detached. Careful examination of the surface also found extensive detachment in areas that appear sound from a distance. The deteriorated condition of the mural's surface makes it very sensitive to abrasion. Even the slightest touch can result in paint loss

- The breakfast room has a dedicated HVAC system but both interior doors on the north elevation are currently left open. Leaving the doors open diminishes the effectiveness of the dedicated HVAC system and results in more rapid deterioration of the mural. This also causes the HVAC system to run at an accelerated rate to try and achieve the specified temperature and relative humidity. This increases both energy costs and wear/tear on the HVAC system.
- The Breakfast Room was also relatively warm (68°F—73°F) with very low humidity—indicating that the HVAC system was operating outside of its designed parameters. Peebles Island has not received any data logger monitoring information since 2009.
- The custom blackout curtains were also open. The blackout curtains were designed to help regulate environmental conditions in the Breakfast Room leaving them open (when the house is closed) defeats this purpose.
- The Plexiglas panels that served to protect the mural at the public entrance/exit to the breakfast room have been removed. The progression of the deterioration is more severe at the at this location. It is very possible that without the Plexiglas protection visitors have inadvertently caused damage by brushing up against the unstable surface.
- The benches on the north elevation, set just inches away from the mural, may have also resulted in some paint loss. It is likely that coats, bags or people may have brushed against the wall causing the unstable paint to flake. The close proximity to the mural may have also encouraged visitors to touch the mural—resulting in loss.



North Elevation—East Door.
Infrared image of the opening.
Warmer temperatures (with higher humidity)
are indicated with orange and cooler
temperatures are indicated in blue.

West & South Elevations.
January 11, 2012





North Elevation—Approximate Grid Location: 16
Typical condition: note highlighted large pocket of highly unstable detached paint and gesso around a section of loss. The outlined area has detached from the plaster.



North Elevation—Approximate Grid Location #20
Losses around the northwest archway. Relatively large losses of delicate areas caused by physical contact.

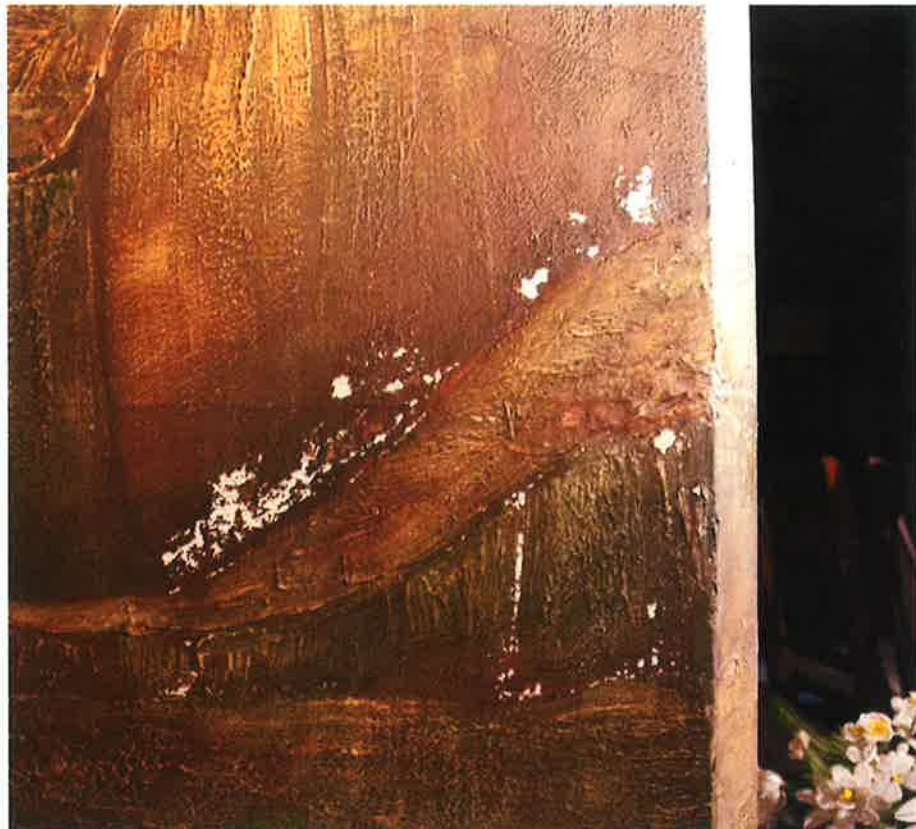
East Elevation
Approximate Grid Location #72

Note: Loss of significant area of
gesso, paint and gilding on doe's leg.
Damage has occurred
since the 2007 survey.



North Elevation—
Archway—Public Entrance

Note significant area of paint loss
since 2007.
Plexiglas protection panel was
removed from this location.





East Elevation
Approximate Grid Location #15
Large areas of recent loss that
have expanded since 2007



South Elevation - Approximate Grid Location #4

RECOMMENDATIONS

GENERAL

- The HVAC system should be inspected to determine if it is operating according to designed parameters.
- The interior doors to the Breakfast Room should remain closed at all times to allow the environment to remain as stable as possible.
- The custom blackout curtains should be drawn when Coe Hall is closed to the public.
- Environmental conditions in the Breakfast Room should continue to be monitored (data loggers) and the data analyzed on a regular basis—at least twice a year.
- The protective Plexiglas panels should be re-installed at the public entrance to the room to protect the mural from abrasion.
- Visitor seating in the room should be located away from the walls to prevent contact with the mural. We recommend limiting visitor seating to the west wall, directly in front of the large windows/doors.

CONSERVATION TREATMENT

Areas of detachment should be consolidated to prevent additional loss of the painted and gilded surface. It will be necessary to inject or saturate select areas with consolidant. Research revealed that Paraloid B-72 is the most effective consolidant for the mural. Fills will be required to restore the original surface texture of the mural. Finally, areas of loss will be in-painted. Again, it is important to remember that this conservation treatment will not solve all of the inherent problems with the Breakfast Room mural. It will however reduce the loss of historic fabric and improve the condition and appearance of the mural. Cleaning the painted surface in the form of grime removal will proceed as safety permits.

Conservation of the mural will be time consuming. The areas of detachment are extensive and will require paint to be set down square inch by square inch. In order to allow this project to be undertaken we recommend that Division for Historic Preservation begins treating one elevation (South elevation) of the mural in 2012. This will help refine conservation techniques and allow us to better estimate the time it will take to conserve the rest of the mural. Hopefully, the Long Island Region would be able to provide assistance including installing scaffolding and moving collections.

Further treatment on the remaining elevation would be undertaken as time and funds are made available. Hiring additional trained conservators to assist in the project would significantly increase the rate of work.

South Elevation

Hours: One week on site.
Staff: (2) Mary Betlejeski & Erin Moroney
Date: Spring/Summer 2012
Prognosis: One completed wall to encourage support and money for the project.
Better estimate of man hours for completing the remaining three walls and ceiling.
The south elevation will be stable and visually coherent with jarring white losses filled and retouched.