Griswold Conservation Associates, LLC

Conservation Report

PROJECT NO.:	GCA no. 06.331.45
PROJECT TITLE:	Conservation Assessment of Interior Decorative Painted Features of Los Angeles City Hall
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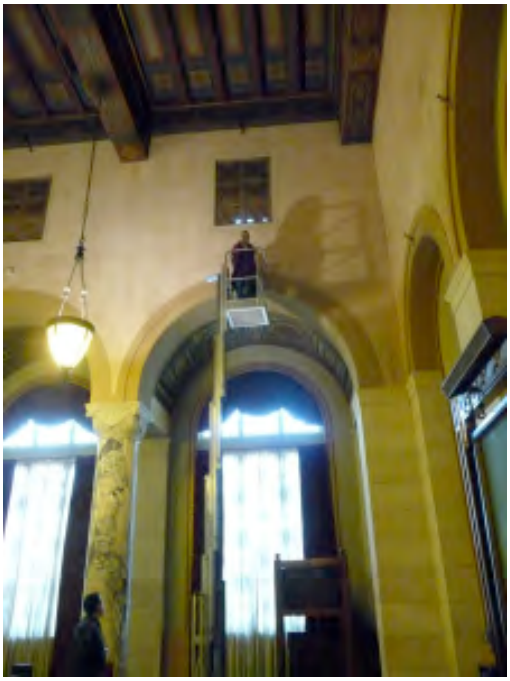
Introduction

This report summarizes work performed under the direction of conservator John Griswold of Griswold Conservation Associates, LLC, in fulfillment of the work plan submitted as part of a Getty Foundation grant proposal by Project Restore. The focus of the project was to assess the condition of significant interior decorative painted wall and ceiling surfaces in the public spaces of Los Angeles City Hall, and to develop a conservation plan for future treatment, monitoring and maintenance.

The work plan for the assessment included development of a Filemaker Pro database to contain individual records for each feature and general surface addressed, review of archival materials and determination of character-defining historic fabric and its relationship to the decorative paint program by Anthony Heinsbergen and Herman Sachs. A survey of the interior environment where decorative painted surfaces and features are present included characterization of materials present in representative areas of the painted surfaces and features, investigation of possible moisture retention in architectural substrates, a condition description of the selected painted decorative surfaces and features accompanied by digital photographic documentation. Limited sampling, field or laboratory analysis of samples as determined to be appropriate by the conservator was performed. Development of treatment objectives and rationale, in light of assessment results, guided the determination of a range of treatment methods and materials for testing in representative, inconspicuous locations. Notes on the execution of treatment test samples and evaluation of test treatment results are included in this assessment report. The investigation resulted in the development of a draft Long-Range Conservation Plan for the interior decorative painted wall and ceiling surfaces.



Since the massive seismic rehabilitation project was completed almost a decade ago, there has been little, if any, evidence of liquid water infiltration into the structure that could lead to moisture retention and delamination or detachment issues, whether for paint layers applied directly to cement plaster or for adhered canvas marouflage oil painting panels. And still, both of these things continue to occur. This investigation has shown that moisture migration and evaporation, and the action of salts either efflorescing or subflorescing as a result, are not active factors in the loss of adhesion between paint and ground layers. Nor do these deterioration mechanisms seem responsible for occasional failure of adhesion of the marouflage panels in the main third floor

hallway. Such moisture intrusion has been an issue in the past, however. It seems clear that measures taken to mitigate the damage by application of clear coatings and overpaint have set up stress within the paint layer(s) that compromises adhesion with the ground layer. The problem seems the worst in areas where the underpaint layer has been mixed with fine sand to achieve a rough texture. Shrinkage upon drying of the clear coat on such an irregular topography would have unevenly imposed localized areas of shear stress at the flat interface between the underpaint and smooth ground. Secondarily, the added weight and reduced vapor permeability of the coating make the coated paint layers susceptible to fluctuations in temperature and relative humidity. Once incipient delamination occurs, the difference between the T and RH of the microenvironment beneath the lifting paint and the T and RH of the ambient space would theoretically be enough to induce differential dimensional response on opposite sides of the underpaint/paint/clear coat layers. The lag time in equilibration between these two microenvironments, combined with the periodic sudden dramatic shifts in RH that often occur within the building, would help explain the adhesion failure.

It should be noted that the formulation and application of the oil paint layers themselves affect their long term adhesion. Complexities related to solvent evaporation from, and cross-linking of a layered oil paint system are well known factors in development of differential stresses within the paint layers, resulting in crack development. Different pigments absorb the oil at dramatically different rates, and individually affect drying. Adding granules such as fine sand to the mix increase the complexity of the situation, compared to smooth, flat paint layers. If the substrate and ground layers are not absorbent to the oil, or do not provide enough of a mechanical “key” to hold the oil paint, then adhesion failure can occur as the oil paint layers cross-link and become brittle.

The exposed white ground layer seen in areas of fresh flaking is quite smooth. The surface is slightly glossy, and may have been sealed with a glue size or varnish. Alternatively, the ground may have initially been absorbent but oil from the paint layer could have leached into it initially and dried before the rest of the paint layers. If a glue size is present, this would add to the sensitivity of this interface to fluctuations in temperature and relative humidity.

Review of Archival Materials

2. Review of archival materials, including records related to the commission and execution of the artwork, compilation of available historic photographic images, establishment of chronology of past restorations through archival documents and interviews of LACH and Project Restore staff. Determination of character-defining historic fabric, and its relationship to the decorative paint program.

Kevin Jew provided access on request to a database of photographs from the Library. The Bureau of Engineering hired a painting contractor through Clark Construction, the general contractor for the seismic rehabilitation project. The extent of work done appears to have been repainting or refreshing of broad color areas. A report by Robert Powers and Cynthia Hamilton of Powers and

Company from September, 1999, a firm retained by Levin and Associates to undertake conservation testing and the development of conservation procedures for the Council Chamber and Session Room of the Board of Public Works was provided for review as well. Construction drawings from architect Brenda Levin's set from the initial visualization for the seismic rehabilitation project was submitted for reference by GCA. These were scanned into PDF format for consultation during this investigation. Several attempts to meet with Joe Nicoletti of Chameleon Paintworks, a decorative painting contractor working for Project Restore in the early 1990's and responsible for the repainting of the decorative ceilings in the Main Street Lobby, were made to no avail. (John Griswold, then with Wharton and Griswold Associates, Inc., was involved at the time as a conservation consultant to Project Restore, and recalls the crew working to expertly mimic but completely repaint the original design and color scheme, including areas of gilding.)

A detailed chronology of past restorations and maintenance was found to be too difficult to recreate with any degree of accuracy. However, a tradition of respecting the integrity of the more artistically complex, and arguably the more historically significant components of the decorative painting, had been established early in the history of 20th century maintenance of the building.

Marouflage panels exhibit little if any retouching, with interventions focusing primarily on maintaining adhesion to their intended location, or simple repairs of tears and retouching of minor losses. This includes the long marouflage panels attached to the vault ribs of the main north-south corridor of the 3rd floor, as well as the smaller incidental panels featured within elaborate geometric borders and fields.

The most significant intervention observed on these more complex decorative areas with paint and metal leaf applied directly to wall surfaces appears to have been the application of one or more layer of clear coat, apparently a resin varnish, which would have resaturated color and provided a sense of consolidation of flaking areas, however temporary. A long tradition of local retouching of flaked paint has existed, and has been carried out with varying degrees of care, ranging from professional attention to reestablishing the lost texture with infilling material, to simple daubing with casually matched paint in order to hide the brilliant white plaster. This tradition was seen to be ongoing, and not administered in a centralized way, when areas of flaking paint had "disappeared" in the Main Street Lobby during the course of this study.

The painted ceilings of the Council Chambers and the Session Room of the Board of Public Works seem to have escaped any restoration work, with the exception of the preliminary conservation testing by Tatyana A. Thompson and Associates, Inc. for Powers and Co., and presumably gentle surface cleaning to remove construction dust, etc. at the end of the seismic rehabilitation project. The same seems true of the wooden ceilings of the vestibule near the Rotunda.

Interior Environment

3. Survey of interior environment where decorative painted surfaces and features are present, including collection of temperature, relative humidity and light level readings for a period of up to 6 months. Placement of dataloggers (provided by the team) will be adjusted depending on intermediate data collected, and the presence of suspected microenvironments affecting the painted surfaces .

Onset Hobo (Series 12) dataloggers were placed on cornices, etc. in the vicinity of selected features of significance, to collect temperature and relative humidity data. Data was collected for approximately 9 months. The units employed did also record light level information, but it is omitted from the graph overlays in the database records because no significant correspondence between T or RH and light levels was noted. This may be due to long hours of illumination at night in the public areas where the decorative paintings occur, intermittent use of rooms and corresponding patterns of use of lights, etc. The spaces are large and interconnected enough that the massive volumes of air might not be significantly affected by the heat generated from illumination sources. Also, daylight does not play a significant factor.

In general, it was noted that while the building's HVAC system efficiently tends to maintain ambient temperatures within the system's setpoints, relative humidity was seen to fluctuate significantly, and occasionally dramatically. These dramatic swings, usually significant and sudden drops in RH, correspond to typical Santana wind conditions common to southern California. The building does tend to buffer these changes somewhat compared to outdoor conditions, but not enough to prevent drops to as low as 15% on occasion.

Comparison of data between loggers in different areas of the building does not reveal dramatic differences indicative of localized microclimates, let alone allow correspondence of any exceptional local environmental conditions with observed paint flaking or marouflage adhesion failure.

Casual observation of patterns of sunlight falling on interior surfaces suggests that surface warming and related shifts in RH is not a significant factor in the City Hall interior spaces. Most of the decorative painting is completely isolated from sunlight.

Materials Characterization

4. Characterization of materials present in representative areas of the painted surfaces and features, including direct observation in situ, microscopic field examination, review of archival documentation, minimal solubility testing and possible sampling/cratering in inconspicuous locations (mutually agreed by team and Project Restore representative).

The investigation performed by Tanya Thompson on behalf of Powers and Co. provides a significant amount of information regarding characterization of the material used to create the

decorative painted surfaces. in the Council Chamber and the Session Room of the Board of Public Works. The report states that:

> "the decorative painting in these spaces was executed in both oil and water-soluble paints that were often applied to plaster surfaces that were treated with sand or pebble-like inclusions to create a heavily textured ground. As in other areas of the building, the paints were often applied very heavily with bold and distinctive brushstrokes that created ample texture to provide the three-dimensionality necessary for viewing from a distance."[1]

In fact, it was determined during the present investigation that in the areas examined, the plaster surfaces were smooth finished before a textured ground layer was applied. Thjs ground layer appeared to be oil paint. It is interesting to note the mention of water soluble paints being used in combination with the oils. In flat areas of the elaborate ceilings of the Council Chamber and the Board of Public Works, a water-based paint was apparently used, e.g. on the Celotex acoustic tiles. In some cases, conservator Tatyana Thompson reports water soluble paints on the textured walls and ceilings painted directly on the plaster. Perhaps the conservator had tested areas that had never been coated with a varnish, which would have saturated any matte, water based paints based on media such as casein, gum arabic, tempera, etc. (The painted redwood ceilings of the vestibule adjacent to the main rotunda may have been painted with a water soluble paint but even here there seems to be a thin oleo-resinous coating present.) Given the ubiquitous presence of what appears to be adhesive size used on the smooth plaster, it is possible that at least some of the reported sensitivity to moisture may be related to a porous, oxidized, pigment rich, or thinly applied layer of oil paint on top of such a moisture sensitive sizing.

Ten cross sections of paint layers were reportedly taken from each of the two rooms. These were made in order to confirm the originality of the the finishes. The results reportedly demonstrated that:

> "The existing paint scheme in both rooms is largely original with previous repainting undertaken typically on the less decorative surfaces and those surfaces that would have been exposed to excessive wear and tear. In both rooms, the ceilings and the most intricately painted sections of the walls retain their original paint schemes. Generally, the monochromatic wall surfaces and the less elaborate areas of decorative banding were repainted in colors that were matched to the exposed surfaces of the original finishes. In many instances, the exposed surfaces of the original finishes had darkened and thus the infill painting was executed in colors that are darker than the originals. In contrast, certain surfaces in the Council Chamber were originally a darker color and were lightened over the years as public preference for lighter colors increased." [2]

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1 Powers, Robert and Cynthia Hamilton, *Conservation Testing and Development of Conservation Procedures for the Council Chamber and Session Room of the Board of Public Works in the Los Angeles City Hall*. Powers and Co. for Levin and Associates, Inc. September, 1999, pp. 2-3.

2 Powers, p.3.

This finding is consistent with the observations made in the present study in the other spaces addressed. The Powers report goes on to recommend a complete finishes analysis, meaning identification of the original colors, in these rooms.

Investigation of Moisture Retention

5. Investigation of moisture retention in architectural substrate using various remote sensing methods including Protimeter moisture meter (with and without probes), IR thermography (both passive observation and before/after gentle warming with an IR source), and surface temperature sensing. Correlation of measurements and observations made using these techniques at different times of day and in different seasons, and comparison with interior environmental data, can help build an understanding of factors affecting efflorescence and subflorescence, differential physical behavior of layers of coatings, paint, ground, substrate, etc.

A Protimeter Surveymaster moisture meter was used in selected areas to help identify possible moisture retention patterns in the building substrate, e.g. in the Main Street Lobby. While readings are not quantitative, series of readings at data collection points in linear series or following a grid can indicate anomalous areas of higher moisture, or show comparative trends such as rising damp from the bottom of the wall up in a gradient. Different substrates e.g. polished marble vs. painted wood or plaster) will give different numerical readings, and cannot be interpreted to signify varying degrees of moisture content between these materials. Nonetheless, it is useful to conduct such a survey in rooms with a variety of materials in order to spot trends characteristic of retained, sub-surface moisture.

No significant anomalies or trends in the readings emerged to suggest localized sub-surface moisture.

IR thermography using an IRISYS 4010 far range IR camera was tested on three occasions from 2 to 4 months apart. Both “passive” observation and “active” observation methods were used. The passive method involved visual evaluation of both black and white and color-coded video images of architectural surfaces seen through the camera under ambient conditions. The “active” method incorporated a heat source directed at the area being examined, in this case a hand-held, infrared heat lamp. The latter method increases the surface temperature very slightly and allows observation of subtle anomalies as the IR emission rate changes as it cools, enhancing detection of possible sub-surface moisture retention.

On all occasions, in different seasons, it was seen that no significant indications of retained moisture were detectable using this technique. Coupled with the moisture meter data, it seems that the interior walls of City Hall are well insulated from moisture intrusion.

Condition Assessment

6. Condition survey of painted decorative surfaces and features using the database developed in step 1 above.

See the assessment survey records included in this report.

Digital Photographic Documentation

7. Digital photographic documentation, including 1-3 images per record to identify all surfaces and features addressed, plus up to 4 detail images per record. Additional photos may be taken to illustrate points made in the assessment report. Image format will be JPEG. High resolution TIFF images as a baseline document of condition are not included in this assessment, with the exception of documenting before and after treatment conditions of test areas if significant changes are to be made.

In most cases, more than three JPEG photos were taken of areas of interest for each feature. These are included as low-resolution reference images in each database record. The image files are submitted on the media disc accompanying this report.

Sampling and Analysis

8. Limited additional sampling, laboratory analysis of samples as determined to be appropriate by the conservator to help answer questions related to the characterization of materials, deterioration mechanisms, and/or assessment of treatment methods or materials.

Samples collected from representative areas for microscopic examination and simple analysis included detached flakes of paint (incorporating all layers and gilding, along with coatings), scrapings of the smooth white substrates exposed under the flakes, several adhesives from the back of the detached areas of a marouflage panel, and a small piece of the edge of a marouflage panel including the canvas substrate.

The following table lists the samples, examination methods used and observations made.

Sample No.	Location	Description	Examination/ Analytical Methods	Observations
1	Barrel Vault Ceiling Rib, 3rd Floor, North Hall, marouflage oil on canvas painting	Piece of translucent adhesive behind canvas, from restoration	iodine potassium iodide spot test	mixed results, turned yellow with brown flecks. Probable positive for PVA dispersion.
2	Barrel Vault Ceiling Rib, 3rd Floor, North Hall, marouflage oil on canvas painting	Granular, yellow, brittle adhesive under sample #1	solvent swelling test, hot water immersion	softens, tacky on contact with hot water; slight swelling in toluene. Possibly animal glue.
3	Barrel Vault Ceiling Rib, 3rd Floor, North Hall, marouflage oil on canvas painting	Smooth white plaster underneath beige paint layers, all under adhesive/ canvas	Stereobinocular microscopy, Proscope digital microscopy (40x, 50x, 200x)	No salts visible; paint layer is well adhered. Remnants of granular adhesive on surface are poorly adhered.
4	Barrel Vault Ceiling Rib, 3rd Floor, South Hall, wall paint next to marouflage oil on canvas painting	Fallen wall paint flakes from near 4th canvas panel at south end of hall	Stereobinocular microscopy, Proscope digital microscopy (40x, 50x, 200x)	No salts visible; slight remnants of white adhered to underside of paint, from wall plaster. Apparent overpaint layer present.
5	Barrel Vault Ceiling Rib, 3rd Floor, North Hall, marouflage oil on canvas painting	Piece of canvas from edge of marouflage panel, just above cornice molding. Coatings and adhesives intact.	Cross sections mounted; x-sections and back of flakes examined using reflected visible light microscopy.	Delamination of painted canvas from adhesive ground visible; new adhesive introduced into void, also cracked, failed adhesion to canvas
6	East Rotunda ceiling	Flakes collected from representative color areas, at south end of north groin vault. Multiple areas sampled to get representative zones.	Cross sections mounted; x-sections and back of flakes examined using reflected visible light microscopy.	Gold layers seen to be discontinuous, occur between paint payers. Leaf probably applied to tacky oil paint surface. No salts visible on underside of flake. Clear coating visible over grime layer. Rounded sand (quartz?) seen within underpaint layers

Sample No.	Location	Description	Examination/ Analytical Methods	Observations
7	Ceiling South Hall Stair Vestibule, 3rd Floor	Exposed white smooth substrate at site of flaked paint	Direct microscopy *in situ* with field scope (50x, 100x)	No salts visible; slight pitting in random spots
8	Ceiling vault, Spring Street Vestibule, 3rd Floor	Peeling edge of marouflage panel, adhesive remnants	Direct microscopy in situ with field scope (50x, 100x)	Granular yellow, crystalline adhesive similar to sample #2, crumbles between fingers.
9	Ceiling vault, Spring Street Vestibule, 3rd Floor	Granular textured border with gilding and oil paint	Scalpel micro-cratering, direct microscopy in situ with field scope (50x, 100x)	Red ground or oil color under gold layer, over granule. High gloss on surface from varnish layer, well adhered.

Table of sample areas, both collected and in-situ.

See individual survey records for discussion of results.

Treatment Objectives

9. Development of treatment objectives and rationale in light of assessment results.

See individual survey assessment records.

Determination of Treatment Methods for Testing

10. Determination of an appropriate range of treatment methods and materials for testing.

See individual survey assessment records.

Test Locations

11. Identification of representative, inconspicuous test locations for evaluation of chosen treatment methods and materials. Instructions for monitoring and preservation of test areas for future evaluation. Nature of tests, number of test areas, surface area, etc. to be proposed by project team for approval by Project Restore representative.

See individual survey assessment records.

Treatment Testing Plan

12. Execution of in situ treatment test samples per approved Treatment Testing Plan. Evaluation of test treatment results in assessment report.

See individual survey assessment records.

Assessment Report Completion

13. Complete assessment report.

See this report and assessment survey records.

Draft Long Range Conservation Plan

14. Development of a draft Long-Range Conservation Plan. The plan will include recommended goals for immediate, one-year, five-year, and ten-year milestones, based on agreed priority assignments. A budget, estimating costs of labor, materials, analysis, equipment rental, etc. will be developed for planning purposes. Budget amounts will be based on time and material estimates included in the assessment survey records.

Refer to prioritization list (attached) of survey assessment records, with estimated cost range. Following is a draft summary for a Long Range Conservation Plan:

Immediate Goals / One Year Goals

- Stabilize active deterioration on decorative paint surfaces of primary significance, including detachment of marouflage substrates, actively flaking paint.
- Determine feasibility of reduction of recent varnish on sand-textured paint surfaces, monitor to confirm deterioration mechanisms described in this report.
- Establish maintenance/repainting training program for City staff, under direction of Project Restore, for decorative paint surfaces of secondary and tertiary significance, (repainted decoration in Main Street Lobby, flat fields of color elsewhere as approved by project Restore and consulting conservators.
- Begin treatment of Priority 1 areas.

Five-Year Goals

- Treatment of all Priority 1 areas.
- Begin treatment of Priority 2 areas.
- Evaluate ongoing maintenance/repainting program.
- Begin treatment of selected Priority 3 areas
- Determine approach for continued materials characterization for historic color matching for repainting, as discussed in Powers report. Establish program for sampling and analysis as appropriate given art historical/aesthetic goals.

Ten-Year Goals

- Complete treatment of Priority 2 areas
- Continue treatment of Priority 3 areas
- Evaluate ongoing maintenance/repainting program. Include general cleaning of Priority 4 areas.

Summary of Treatment Prioritization and Estimated Cost Range

The following table lists the features included in the assessment in order of treatment priority assignment. A rating of 1 through 4 was assigned to each feature, based on the anticipated rate of active deterioration, and the nature and severity of the distraction caused by the existing conditions. Curatorial concerns were informally considered. However, these priority assignments should be considered guidelines, and changes should be made as needed.

The estimated cost range for each feature is presented as a guideline for budgeting and evaluation of bids from conservators and other contractors/consultants. The cost breakdown provided in each record is presented as a starting point for understanding the rationale behind the estimate. Actual cost distribution among the various categories, such as conservator hours, rate, materials and supplies, equipment rental, scaffolding, etc. may differ from actual bids received.

Priority Assignment and Estimated Costs

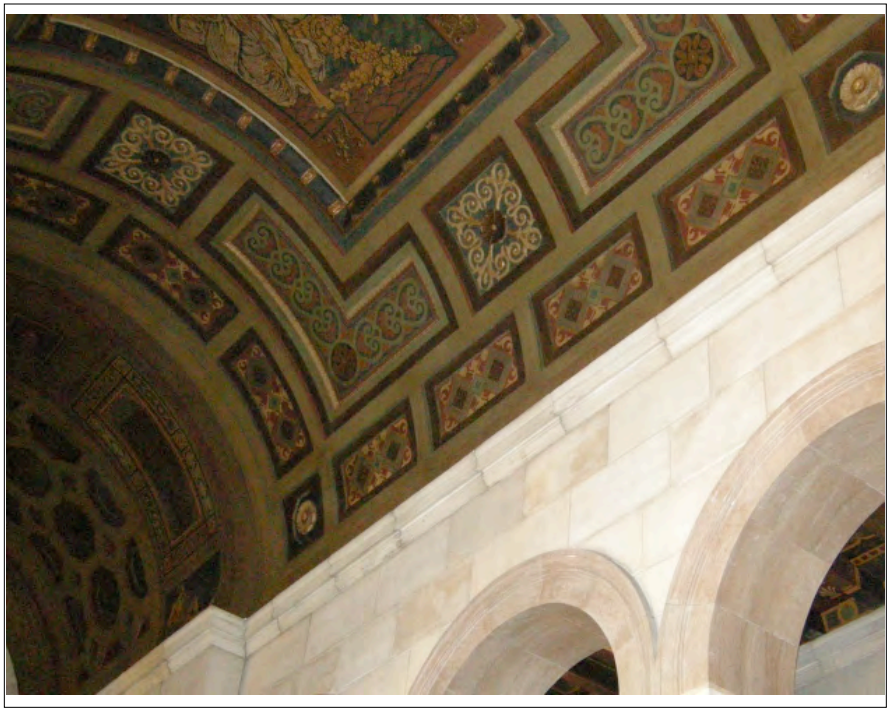
Building Floor #	Location	Main Feature Name	Prioritization	Est. Cost Low	Est. Cost High	Per year?
3	Spring St. Vestibule	Vaulted ceiling	1	$11700	$15700	
3	North Hall	Barrel vaulted ceiling	1	$14200	$16200	
3	South Hall	Barrel vaulted ceiling	1	$14200	$16200	
3	East Rotunda; at corridor	Ceiling	1	$63000	$67000	
3	Board of Public Works	Vaulted ceiling, walls,	2	$63500	$67500	
3	Council Chambers	Main ceiling with beams	2	$96000	$106000	
3	South Hall Stair Vestibule	Vaulted ceiling	2	$11700	$15700	
3	Council Chambers	Arched ceiling murals at	2	$30300	$32300	
3	Elevator Lobby	Ceiling	3	$3700	$3700	
3	Board of Public Works	Main ceiling	3	$70800	$80800	
3	Vestibule with Wood	Ceiling	3	$11700	$13700	
3	Council Chambers	Blind arches on back wall	3	$7300	$8300	
1	Main Street Lobby	Ceiling	4	$1500	$2000	yes
3	North Hall Stair Vestibule	Vaulted ceiling	4	$0	$0	
27	Mayors Ballroom	Ceiling	4	$0	$0	

Conservation Assessment Survey Records

This section following the above summary page contains the individual survey records, comprised of eight pages for each feature addressed.

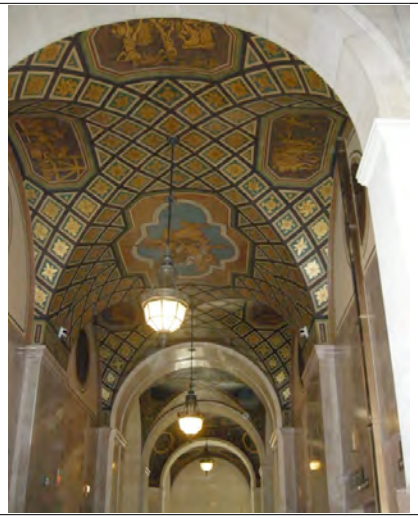
Building Floor #	3
Main Feature Name	Vaulted ceiling
Building Orientation	West
Location Description Notes	Logger 2304714 is located on top of the marble entablature, directly above the center entry arch.
Building Related Substrate	Cement plaster marble entablature, gypsum plaster
Painting Substrate	Direct on plaster; marouflaged canvas panels. Bas relief inserts in some areas; these may be cast with fabric or fiber reinforcement, glue composition or plaster. (Not excavated to confirm.)
Painting Ground Substrate	Adhesive sizing on smooth, white plaster. Sanded texture, appears to be mixed in ground layer
Under Leafing	Gold leaf
Coatings	Oleo-resinous varnish

Location	Spring St. Vestibule
Specific Feature Reference	Main barrel vault with ribs, groin vaults adjacent.
Location Orientation	East



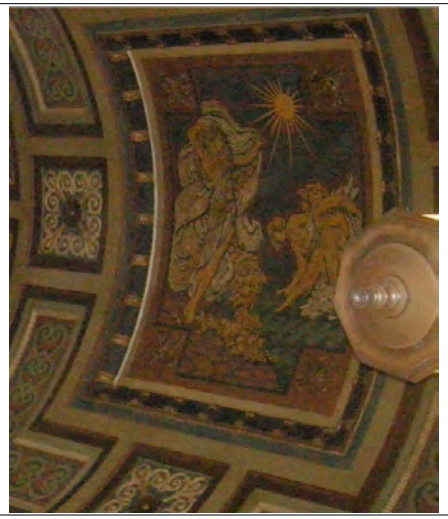
Underpainting	Brushed lines, stencil marks visible.
Paint Layers Description	Oil paint layers with some impasto, stippling; local gilding both above and below paint layers (integrated during the paint application process)

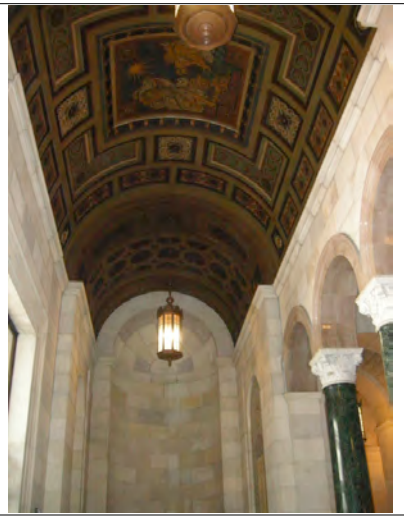
Overall Assessment	Generally good overall condition, with minor flake losses in paint, local staining, soiling.
Condition History / Previous Restoration	No reported retouching or repairs.
Structural Condition	Second panel from south end of barrel vault, peeling. Recessed coffers, south side of far south canvas, mounting peeling off.
Surface Condition	Barrel vault, south east point of panel (in corner), gold leaf thinning.



Vaulted ceiling

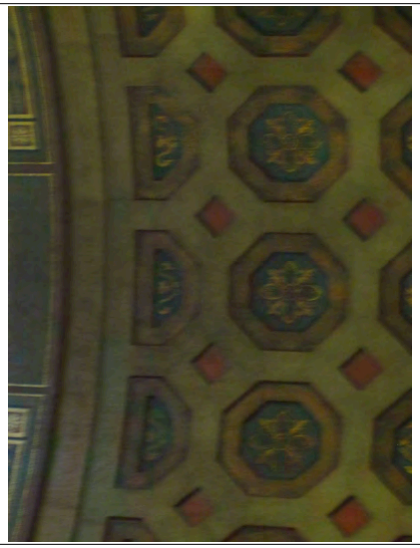
Spring St. Vestibule

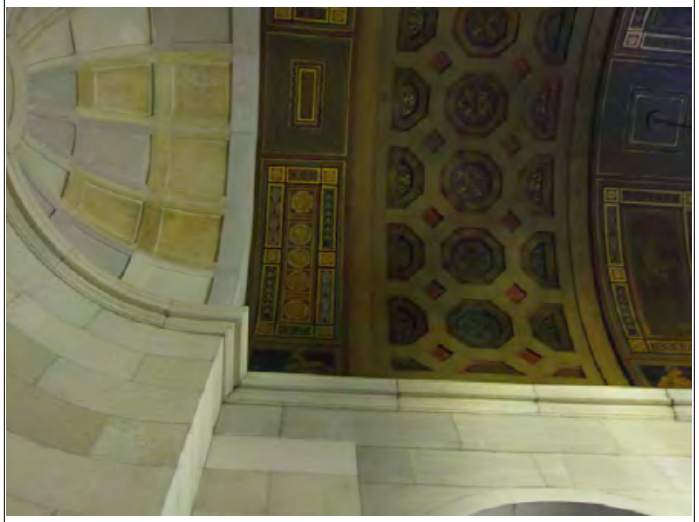




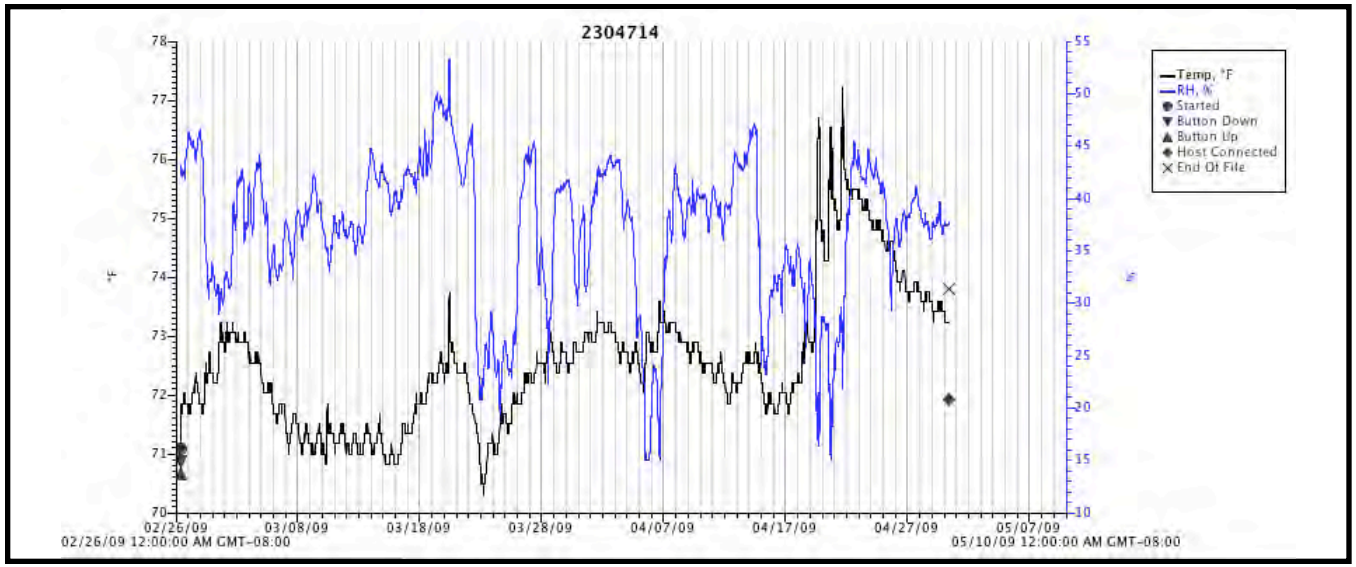
Vaulted ceiling

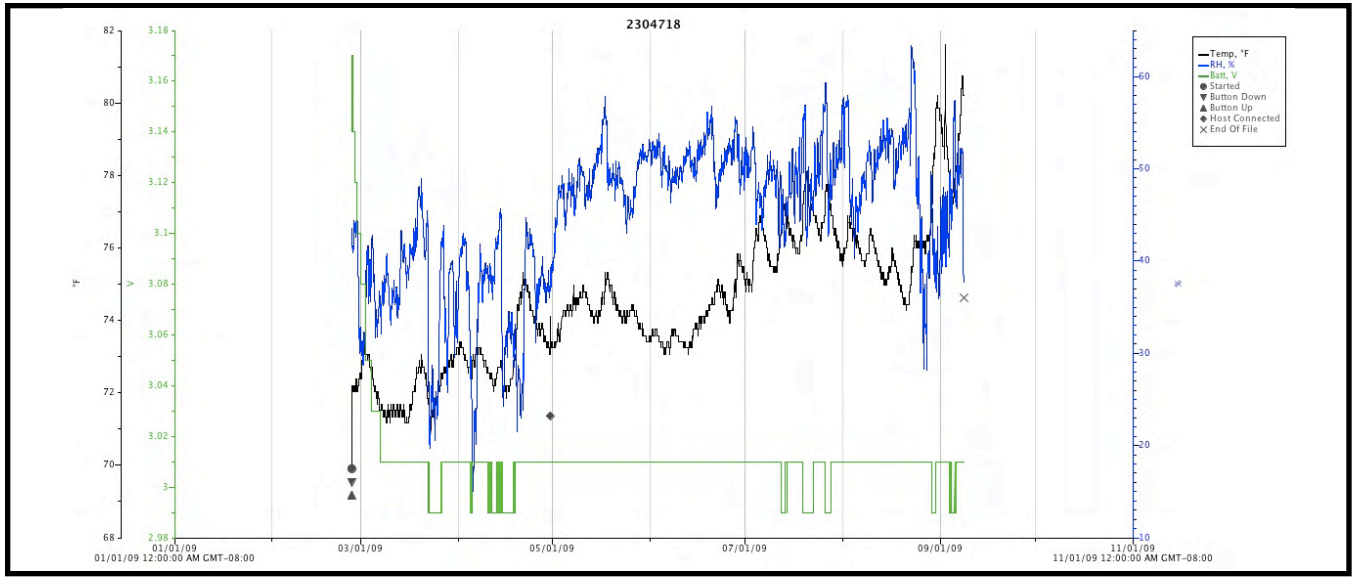
Spring St. Vestibule





Environmental Monitoring Data Graphs





Environmental Description Summary

Temperature range of 70 to 82 throughout the year. Diurnal fluctuations are present but not generally more than a few degrees. RH ranged from 15% to 64.5% Seasonal trends in T and RH are notable. RH swings are mainly dramatic and sudden drops, presumably due to Santana Wind conditions.

Sampling , Analysis, Testing

No samples collected from this area.

Prioritization: ◉ 1 ○ 2 ○ 3 ○ 4

Treatment Recommendations

• Determine extent of delamination of marouflaged canvas from vault ribs.
• Depending on extent, the entire canvas might be removed, and the adhesive reduced mechanically with fine hand tools from the back of the canvas and the substrate.
If local delamination only, partial removal may be possible, with local reduction of adhesive.
• Readhere with an appropriate adhesive system. A bulked, high-tack, neutral pH adhesive system that is capable of gap filling and retaining flexibility/resiliency may be appropriate. It should also be resistant to atmospheric moisture and biological attack. One option may be Lascaux acrylic adhesive, a dispersion of a thermoplastic acrylic polymer based on methyl methacrylate and butyl acrylate. The two types 360 HV and 498 HV are thickened with acrylic butylester. All types have a pH 8 - 9 and are biocide stabilized.
• Reduce old disfiguring overpaint, if present, using an appropriate organic solvent or aqueous system, based on solubility testing.
• Fill losses to closely match the surrounding surface topography and texture with an appropriate compatible fill material, e.g. an acrylic paste (e.g. Flugger).
• Inpaint fills with an appropriate medium to closely match the surrounding surfaces. Paints based on low molecular weight resin such as Gamblin conservation colors (Regalrez 1094) or Golden MSA colors. Supplement with dry pigments as appropriate.

Monitoring and Maintenance Instructions

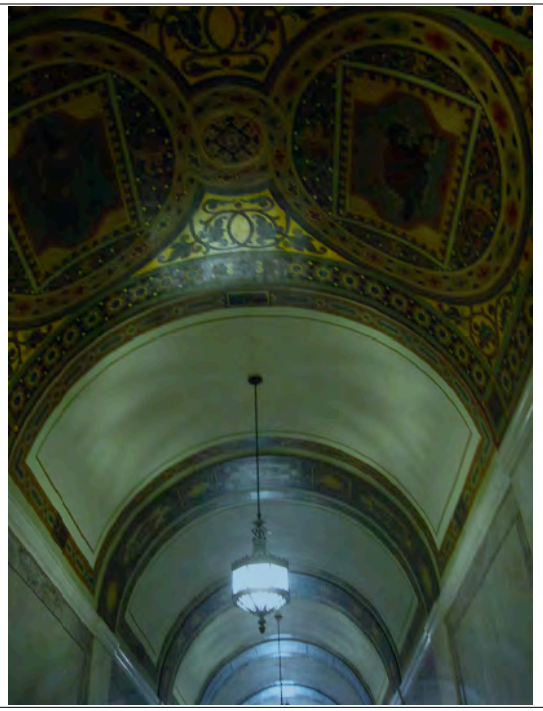
• Establish a maintenance log, noting the conditions and locations of retouchings. Supplement with digital photographs.
• A conservator should be consulted if flaking, loss, efflorescence, etc. occurs. The conservator can coordinate work that may be done as appropriate by decorative paint contractor.

Estimated Cost

Conservator 40 hours @ $125/hr $5,000	
Conservation assistants 40 hours @ $90/hr $3,600	
Materials and supplies $700	
Equipment rental (excluding scaffolding) $400	
Scaffolding $2,000 - $4,000	
TOTAL ESTIMATED COSTS	$11,700 - $15,700

Building Floor #	3
Main Feature Name	Barrel vaulted ceiling
Building Orientation	North
Location Description Notes	Logger 2304717 is located on the marble cornice beneath the 6th Rib of marouflage on the east side of the hall.
Building Related Substrate	cement plaster wall, molded rib, marble cornice.
Painting Substrate	Direct on plaster; marouflaged canvas panels.
Painting Ground Substrate	Adhesive sizing on plaster, where directly painted. Marouflage adhesive appears to be animal glue on oil-painted plaster.
Under Leafing	Gold leaf
Coatings	Oleo-resinous varnish

Location	North Hall
Specific Feature Reference	Ribs, vaults
Location Orientation	North



Underpainting	Brushed lines, stencil marks visible.
Paint Layers Description	Colored opaque oil paint with visible impasto and some transparent glazes

Overall Assessment

While the painted surfaces are largely intact, there has been some damage related to failure of marouflage adhesion, and a history of past repairs.

Condition History / Previous Restoration

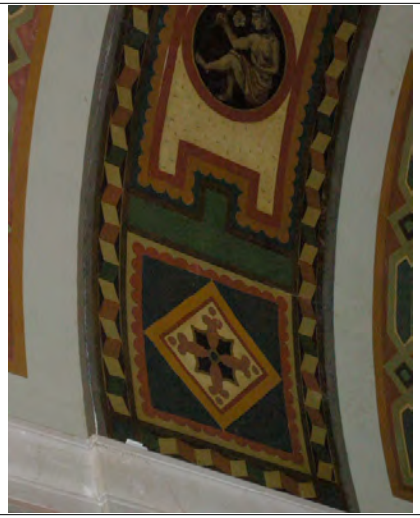
Readhered areas of failed marouflage on vault ribs, with translucent, fluid adhesive emulsion; preliminary microchemical testing indicates PVA (iodine potassium iodide test, mixed results). Older adhesive is crystalline, powdering, golden to yellow, translucent. Slight swelling in toluene. Possibly animal glue. Presumably original, but possibly an earlier attempt at readhesion.

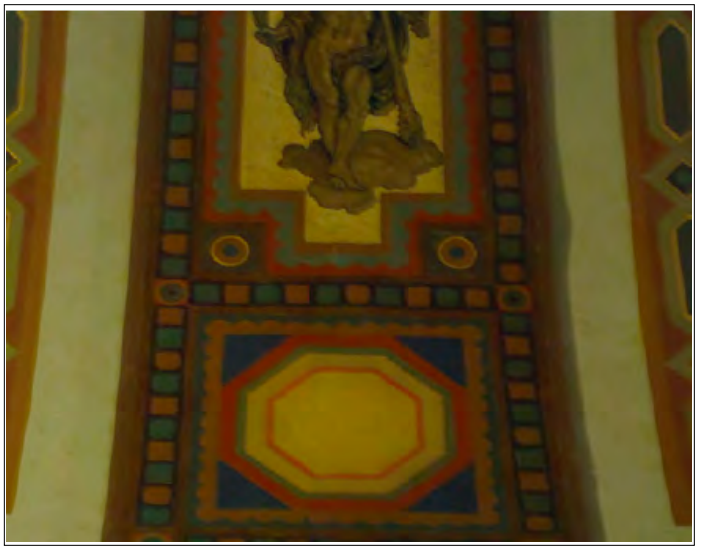
Structural Condition

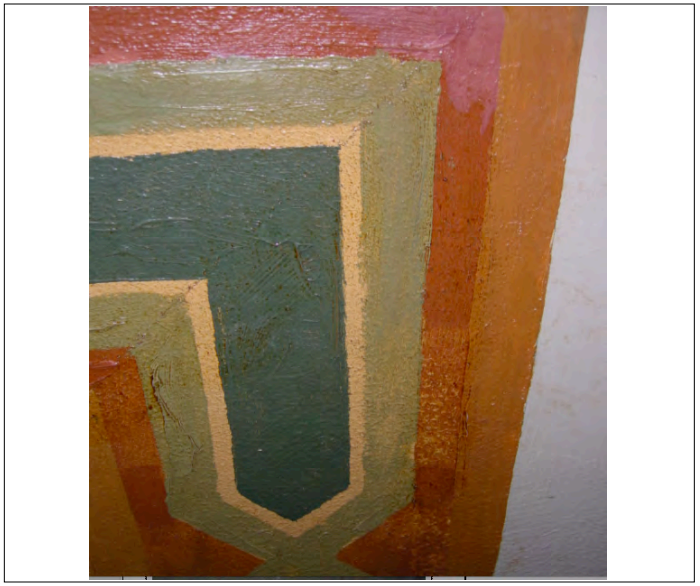
Good structural condition of substrates. Some crumbling, powdering of plaster at areas of marouflage detachment. Not clear evidence of salts.

Surface Condition

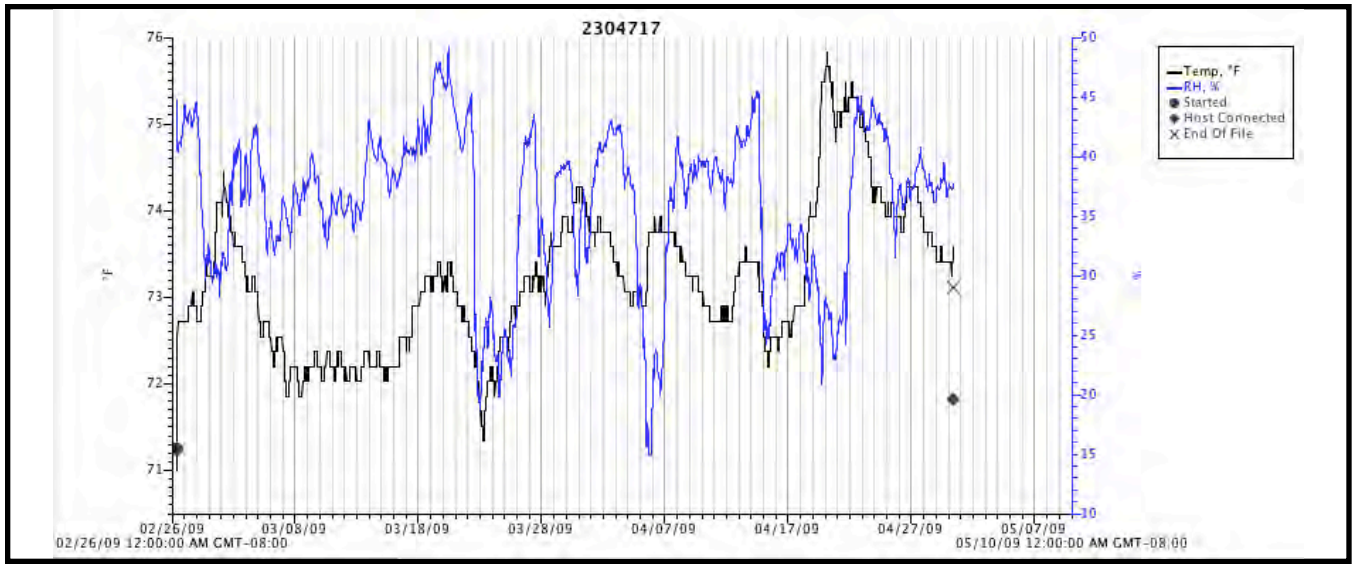
South rib panel, east end, flaking at bottom. East side, canvas pulling away from wall revealing plaster substrate. Northernmost rib, marouflaged panel, detachment and drooping at apex of barrel vault. Amber-brown discoloration originally suspected to be mildew appears to be discolored resin accretion. Local inpaint/overpaint touchups are discolored.

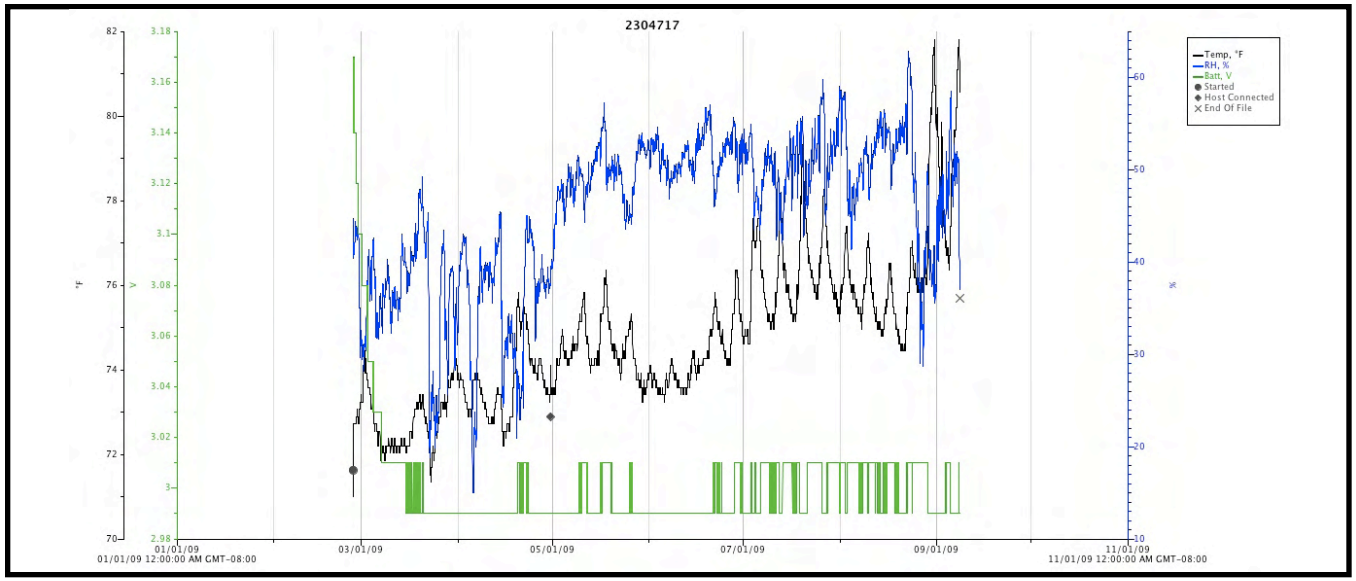






Environmental Monitoring Data Graphs





Environmental Description Summary

Temperature range of 71 to 81 degrees F throughout the year. Diurnal fluctuations are present but not generally more than a few degrees. RH ranged from 15% to 64.5% Seasonal trends in T and RH are notable. RH swings are mainly dramatic and sudden drops, presumably due to Santana Wind conditions. However, it is significant to note that the hallway where the most failure of canvas and paint adhesion has occurred has an environment closely similar to other, more stable areas on this floor.

Sampling , Analysis, Testing

Fallen samples collected of paint layers. See attached report.

Prioritization: ◉ 1 ○ 2 ○ 3 ○ 4

Treatment Recommendations

• Determine extent of delamination of marouflaged canvas from vault ribs.
• Depending on extent, the entire canvas might be removed, and the adhesive reduced mechanically with fine hand tools from the back of the canvas and the substrate.
If local delamination only, partial removal may be possible, with local reduction of adhesive.
• Readhere with an appropriate adhesive system. A bulked, high-tack, neutral pH adhesive system that is capable of gap filling and retaining flexibility/resiliency may be appropriate. It should also be resistant to atmospheric moisture and biological attack. One option may be Lascaux acrylic adhesive, a dispersion of a thermoplastic acrylic polymer based on methyl methacrylate and butyl acrylate. The two types 360 HV and 498 HV are thickened with acrylic butylester. All types have a pH 8 - 9 and are biocide stabilized.
• Isolate losses with a reversible barrier resin. Fill losses to emulate the surrounding sanded texture with an appropriate fill material.
• Inpaint fills with appropriate media to closely match the surrounding painted surfaces.
• Document conditions found, test results, treatment rationale and treatment methods and materials used in a written report. Include digital images showing conditions before, during and after treatment. Include diagrams showing locations of conditions and treatments.

Monitoring and Maintenance Instructions

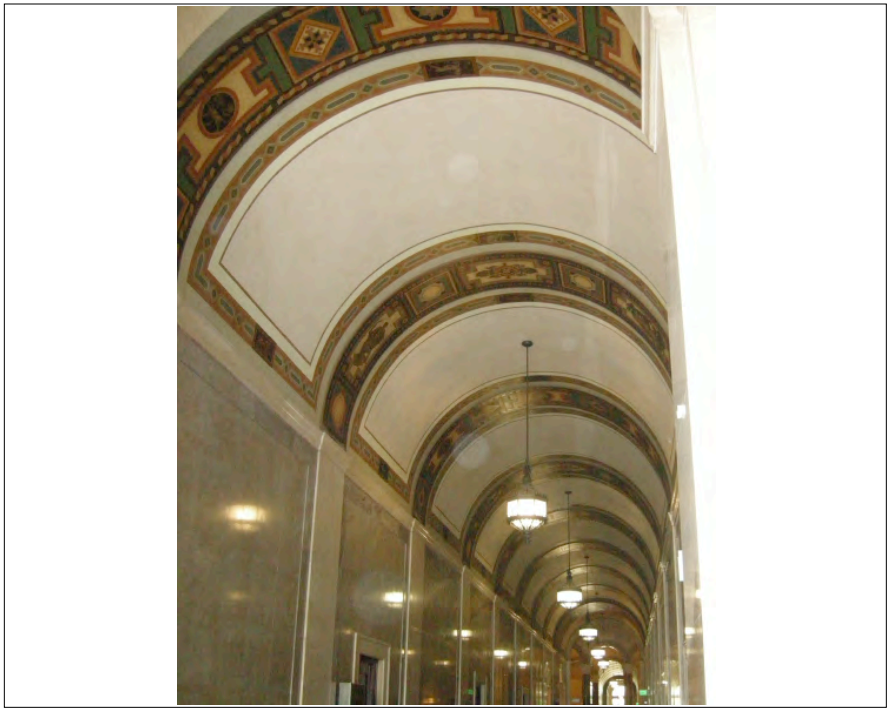
• Establish a maintenance log, noting the conditions and locations of retouchings. Supplement with digital photographs.
• A conservator should be consulted if flaking, loss, efflorescence, etc. occurs. The conservator can coordinate work that may be done as appropriate by decorative paint contractor.

Estimated Cost

Conservator 60 hours @ $125/hr $7,500	
Conservation assistants 40 hours @ $90/hr $3,600	
Materials and supplies $700	
Equipment rental (excluding scaffolding) $400	
Scaffolding $2,000 - $4,000	
TOTAL ESTIMATED COSTS	$14,200 - 16,200

Building Floor #	3
Main Feature Name	Barrel vaulted ceiling
Building Orientation	South
Location Description Notes	Logger 2304719 is located on the marble entablature beneath the marouflage of the 4th Rib on the east side of the hall.
Building Related Substrate	cement plaster wall, molded ribs, marble cornice.
Painting Substrate	Direct on plaster; marouflaged canvas panels.
Painting Ground Substrate	Adhesive sizing on plaster, where directly painted. Marouflage adhesive appears to be animal glue on oil-painted plaster.
Under Leafing	Gold leaf
Coatings	Oleo-resinous varnish

Location	South Hall
Specific Feature Reference	
Location Orientation	Southeast



Underpainting	Brushed lines, stencil marks visible.
Paint Layers Description	Colored opaque oil paint with significant impasto and possibly some transparent glazes

Overall Assessment

While the painted surfaces are largely intact, there has been some damage related to failure of marouflage adhesion, and a history of past repairs.

Condition History / Previous Restoration

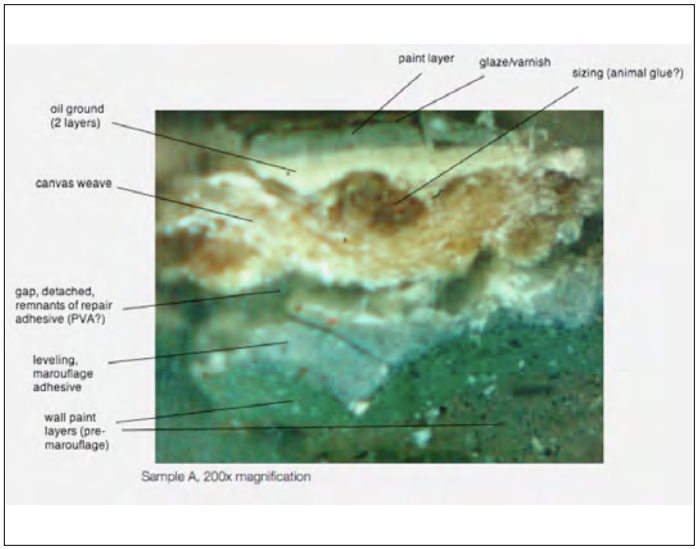
Readhered areas of failed marouflage on vault ribs, with translucent, fluid adhesive emulsion; preliminary microchemical testing indicates PVA (iodine potassium iodide test, mixed results). Older adhesive is crystalline, powdering, golden to yellow, translucent. Slight swelling in toluene. Possibly animal glue. Presumably original, but possibly an earlier attempt at readhesion. No moisture infiltration has been noted since the seismic renovations. Some may have occurred prior to that.

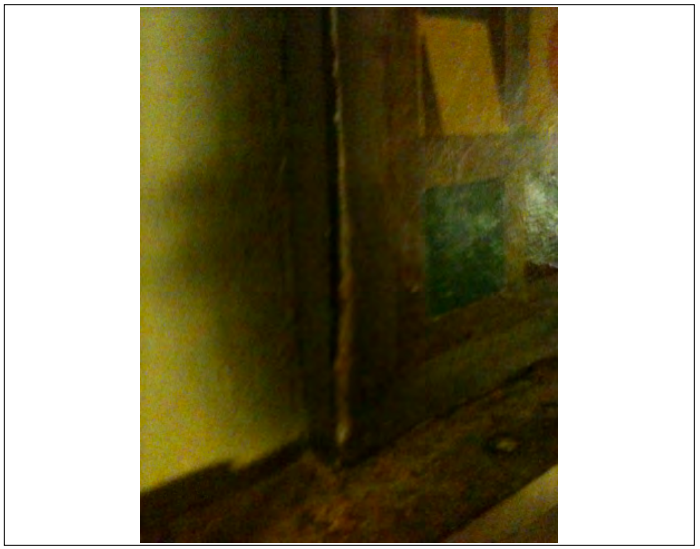
Structural Condition

Good structural condition of substrates. Some crumbling, powdering of plaster at areas of marouflage detachment. Not clear evidence of salts.

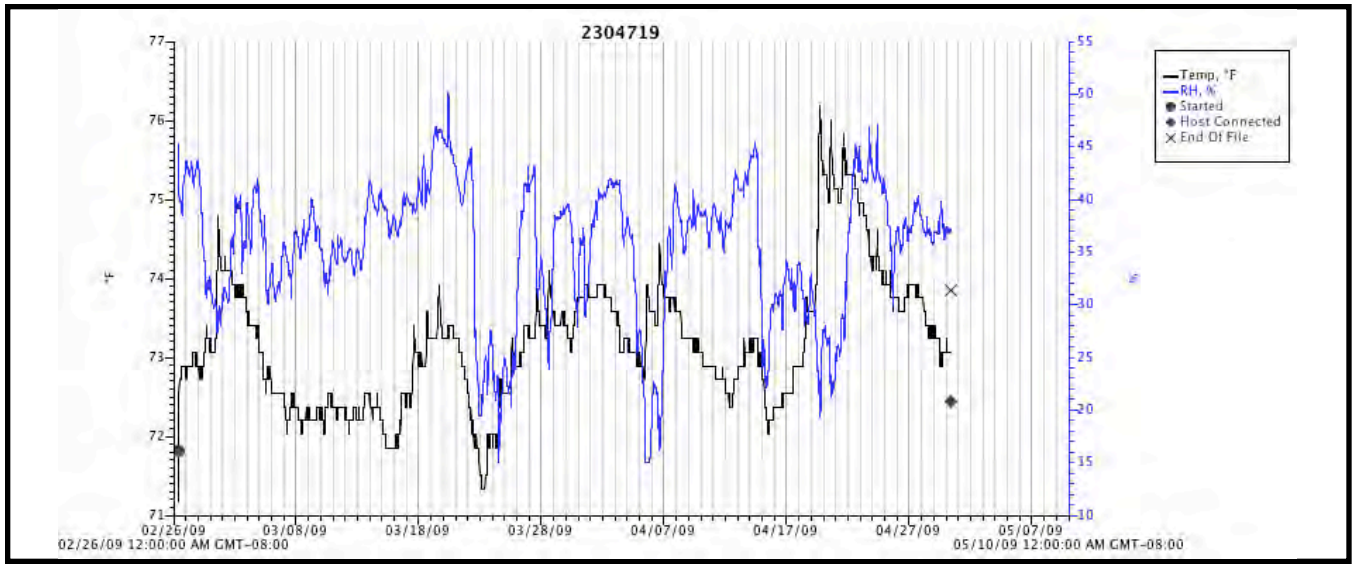
Surface Condition

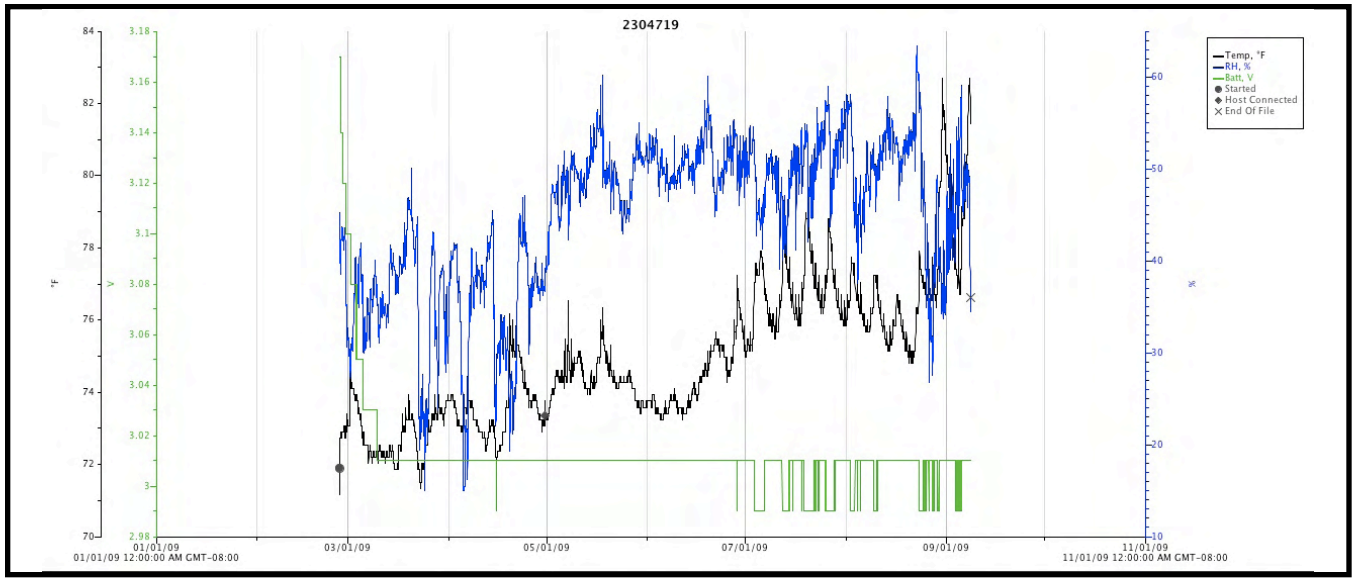
Bottom of both east and west have white chalky residue, related to above. First marouflaged rib at north end of hallway, at both east side and west side, exhibit tears in canvas, previously mended but adhesion failure has reintroduced stress and more tearing. Near the 4th canvas panel from south end of hall, there is local paint loss revealing plaster substrate; possible water damage along edge of marble cornice (where marble meets canvas) on east side. Local amber-brown staining, acretions on marouflaged roundels


paint layer
glaze/varnish
sizing (animal glue?)
oil ground (2 layers)
canvas weave
gap, detached, remnants of repair adhesive (PVA?)
leveling, marouflage adhesive
wall paint layers (pre-marouflage)
Sample A, 200x magnification



Environmental Monitoring Data Graphs





Environmental Description Summary

Temperature range of 71 to 82.6 degrees F throughout the year. Diurnal fluctuations are present but not generally more than a few degrees. RH ranged from 15% to 63.4% Seasonal trends in T and RH are notable. RH swings are mainly dramatic and sudden drops, presumably due to Santana Wind conditions. However, it is significant to note that the hallway where the most failure of canvas and paint adhesion has occurred has an environment closely similar to other, more stable areas on this floor.

Sampling , Analysis, Testing

Fallen samples collected of paint layers. A piece of the edge of the marouflage canvas was collected with a scalpel. See attached report.

Prioritization: ◉ 1 ○ 2 ○ 3 ○ 4

Treatment Recommendations

• Determine extent of delamination of marouflaged canvas from vault ribs.
• Depending on extent, the entire canvas might be removed, and the adhesive reduced mechanically with fine hand tools from the back of the canvas and the substrate.
If local delamination only, partial removal may be possible, with local reduction of adhesive.
• Readhere with an appropriate adhesive system. A bulked, high-tack, neutral pH adhesive system that is capable of gap filling and retaining flexibility/resiliency may be appropriate. It should also be resistant to atmospheric moisture and biological attack. One option may be Lascaux acrylic adhesive, a dispersion of a thermoplastic acrylic polymer based on methyl methacrylate and butyl acrylate. The two types 360 HV and 498 HV are thickened with acrylic butylester. All types have a pH 8 - 9 and are biocide stabilized.
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Monitoring and Maintenance Instructions

• Establish a maintenance log, noting the conditions and locations of retouchings. Supplement with digital photographs.
• A conservator should be consulted if flaking, loss, efflorescence, etc. occurs. The conservator can coordinate work that may be done as appropriate by decorative paint contractor.

Estimated Cost

Conservator 60 hours @ $125/hr $7,500	
Conservation assistants 40 hours @ $90/hr $3,600	
Materials and supplies $700	
Equipment rental (excluding scaffolding) $400	
Scaffolding $2,000 - $4,000	
TOTAL ESTIMATED COSTS	$14,200 - 16,200

Building Floor #	3
Main Feature Name	Ceiling
Building Orientation	East
Location Description Notes	Ceiling in nine sections (3 x 3), with rotunda in center, and eight groin vaults surrounding at cardinal and ordinal points. Logger 2304716 is located on the top of the column capital located in the NE section of the room.
Building Related Substrate	cement plaster ceiling vaults, marble columns and arches.
Painting Substrate	Direct; eight octagonal marouflaged canvas panels in rotunda
Painting Ground Substrate	Adhesive sizing on smooth, white plaster. Sanded texture, appears to be mixed in ground layer
Under Leafing	Gold leaf
Coatings	Colored glazes, varnish

Location	East Rotunda; at corridor to City Hall East
Specific Feature Reference	All
Location Orientation	Northeast

Underpainting	Brushed tones, stencil marks
Paint Layers Description	Oil paint layers with some impasto, stippling; local gilding both above and below paint layers (integrated during the paint application process)

Overall Assessment

Thick varnish, in layers. Possible glue size on smooth plaster. (Gold leaf is present, possible overall sizing treatment?) Textured oil paint layers are relatively thick. Adding varnish may have added mass, and stress from drying causing shear forces to induce delamination. Microenvironment in blind delamination areas causes progressive loss of adhesion, esp. if moisture sensitive glue size is present? Localized, recurring limited to north groin vault. Possible earlier history of water leak, but no records of this.

Condition History / Previous Restoration

Local touch-ups with paint seen in areas of former flaking. Appears to be revarnished, at least in groin vaults. A recommendation made in a past report to do this does exist, according to Kevin Jew.

Flaking paint in groin vaults, possibly related to earlier moisture intrusion because of evidence of a history of paint loss and touch-ups at north groin vault, but no evidence of staining, efflorescence, repairs, etc. No recent water leaks (at least since seismic retrofit project).

City maintenance for early facades, local paint touch ups when paint loss occurred, without in-filling texture. Especially at North and South groin vaults. Project Restore: Joe Nicoletti (Chameleon Paintworks) did local in-painting of losses on North groin vault.

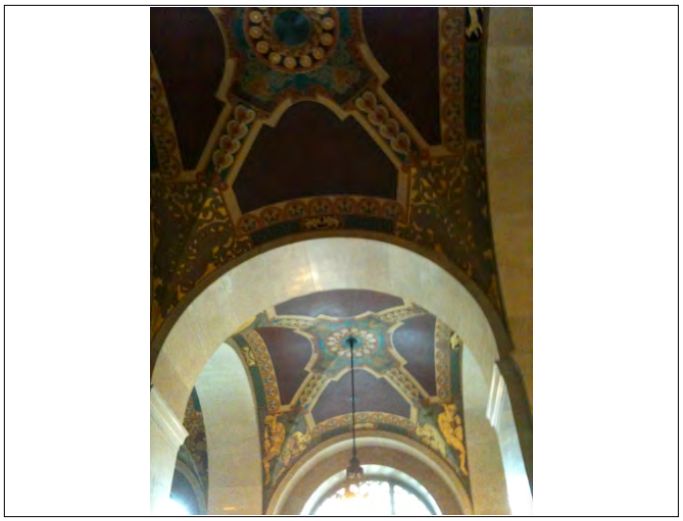
Structural Condition

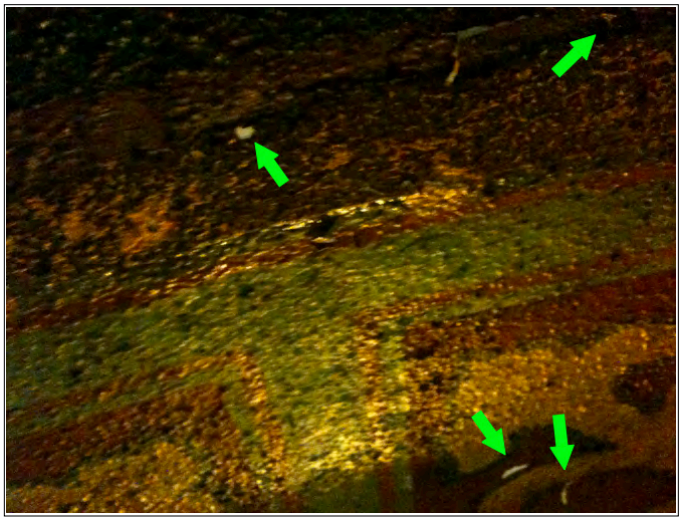
Substrate appears to be in good condition, with no losses, erosion of details, cracks, etc. Octagonal marouflaged panels in rotunda appear to be well-adhered.

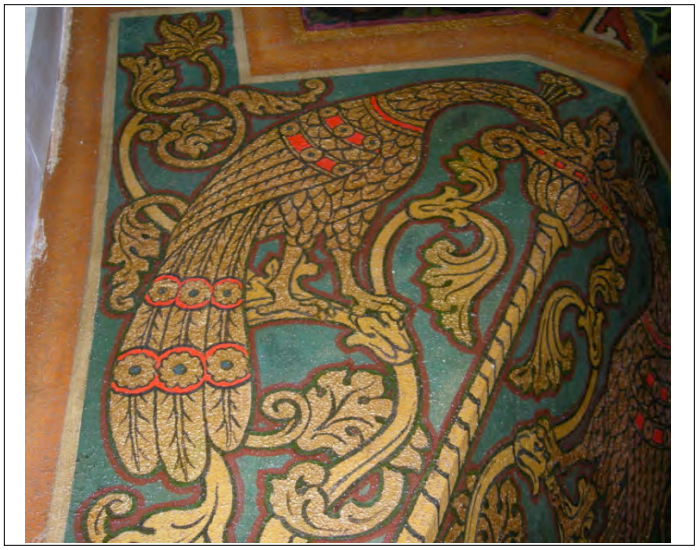
Surface Condition

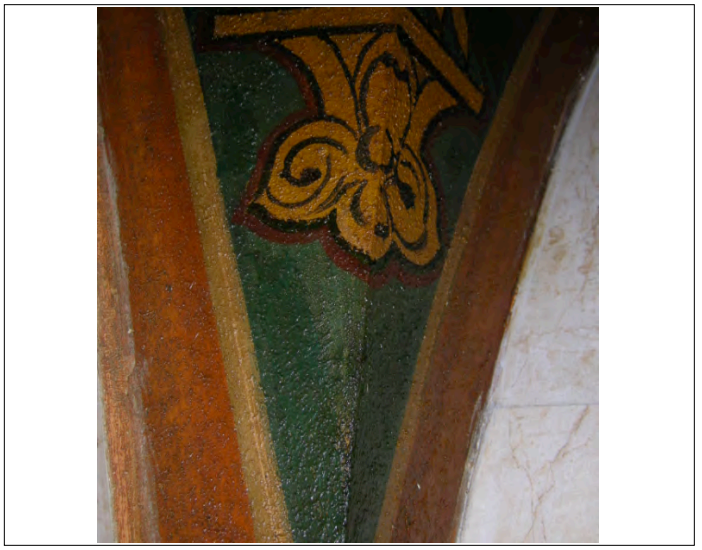
Severe flaking, incipient cleavage of paint layer at white plaster ground layer on north groin vault (south end of vault). Long term, ongoing problem, based on the various campaigns of toning/in-painting visible.

7 of 8 groin vaults have peeling, revealing smooth plaster substrate. Central north groin vault, NW point of groin vault (in organic pattern with peacock), paint chipping in vine pattern. North west, paint chipping revealing plaster substrate. West side of groin vault, SW of west center groin vault, second square on red fret pattern, peeling. South east groin vault, possible water damage at joint between marble and plaster. Southern most triangular section of center square lattice pattern (SW corner), paint peeling revealing plaster substrate. Main dome, gold flower - over paint? In-painting?









Environmental Monitoring Data Graphs