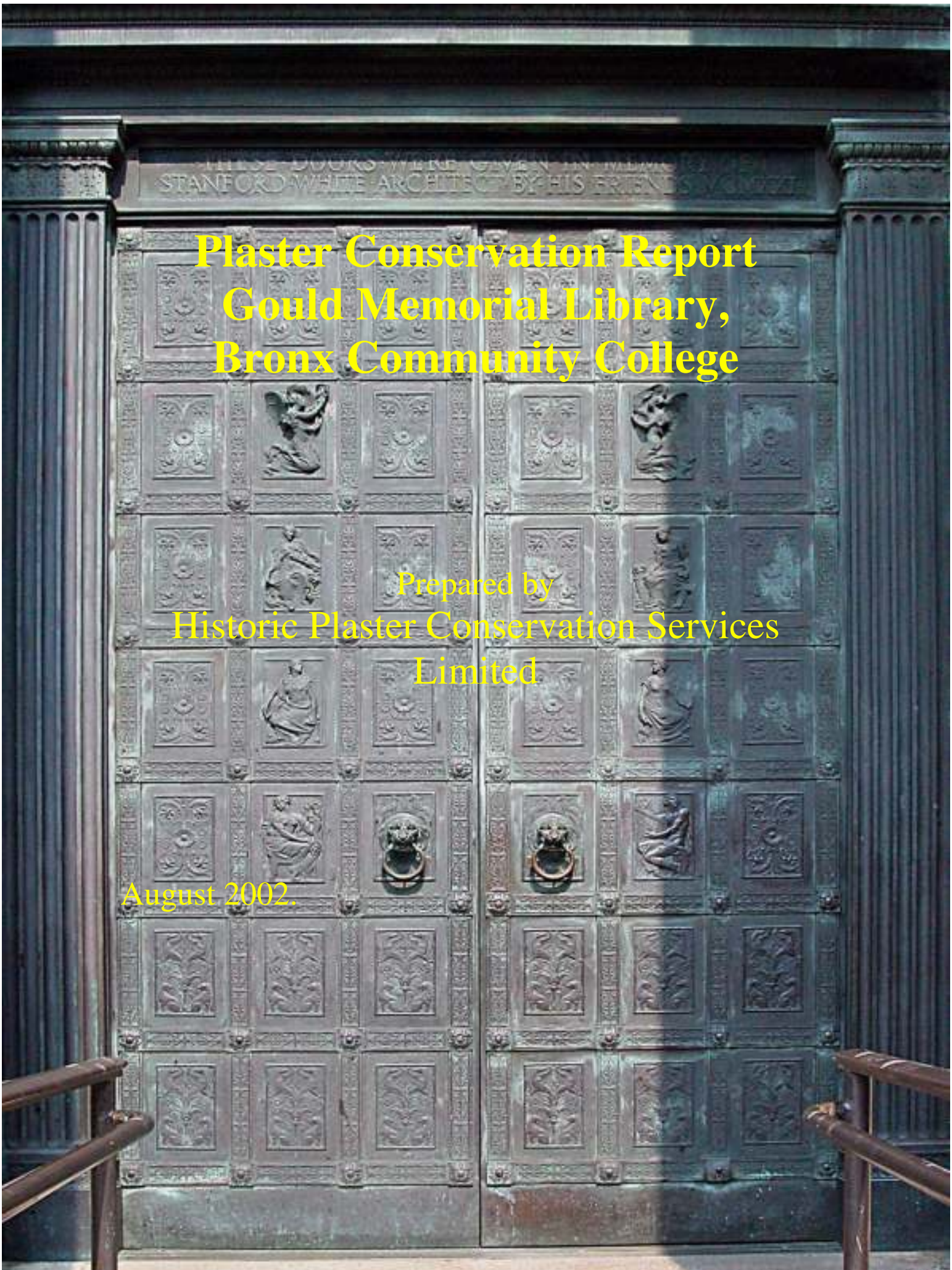

Plaster Conservation Report
Gould Memorial Library, Bronx Community College

Prepared by

Historic Plaster Conservation Services Limited

August 2002.

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Gould Memorial Library is an Interior Landmark listed by the New York City Landmarks Preservation Commission. Noted architect Stanford White designed the building at the turn of the 20th century.

Over the past several years, and as recently as last fall, pieces of decorative plaster have fallen off the ceiling, creating a safety concern for users of the building.

During June and July of 2002, Historic Plaster Conservation Services undertook the successful restoration of the lower entry, grand stairway, and upper hall ceilings of Gould Memorial Library. The restoration project was carried out using the following procedure:

- Clean the plaster with a dry process that uncovers all as-yet-unseen structural faults, removes all unstable paint finishes and leaves the plaster ready for conservation and repainting.

- Stabilize the plaster end panels, coffers and background plaster, and detached ornamentation by consolidation with the injection of acrylic adhesive.

- Repair cracks and other damage that disfigures the plaster.

- Replicate and replace all missing ornamentation.

- Prime and repaint the background plaster in its entirety.

- Touch up gold ornamentation and repaint both domes.

Digital photographs were taken before, during and after the project. (All photos © HPCS by Eric Stewart.) Due to the nature of the work environment, good overall photographs could not be taken while work was in progress. Also, since the scaffold was erected prior to HPCS arriving and had to remain for other contractors after we finished, there are no good overall photographs depicting the ceiling from the floor before and after the plaster and paint conservation work.

Cleaning

Cleaning of the ceiling surfaces was completed in the first two weeks HPCS was on site. This involved carefully brushing and vacuuming the entire surface, followed by wiping with soot sponges. The cleaning was laborious work that had to be carried out in a particularly conscientious manner. Soot was so thick on most areas it obscured visible warning signs of structural faults as well as much of the gold ornamentation.

This is the northwest section of the lower entry ceiling prior to cleaning. The green-beige areas appeared splotchy and dark. The dust and soot layer was so thick it completely obscured the gold ornamentation, particularly the lower portions of the concentric octagons of gold leaves and egg and dart. Past attempts have been made to hide some of the missing ornamentation by painting the stark white exposed plaster with an olive green color. To the left there is an indication of a paint-adhesion problem. Upon closer inspection it is apparent the cause is water infiltration.

Much of the paint above the lower entry was in very poor condition. This photograph was taken before cleaning and shows the green background and the peeling gold paint. The staining on the bare plaster is an indication that the cause of the problem is water infiltration. This paint was so fragile that most of it flaked off the plaster during cleaning.

This was the typical condition of the ceiling before cleaning. A 1/8" – 1/4" layer of dust and soot obscured all the fine details of the plaster as well as most visible signs of fracture or instability.

A typical water-damaged area on the southwest side of the lower entry stairway ceiling.

This is a portion of the lower entry ceiling at the northeast side after cleaning. The background paint color was permanently soiled in some areas and the deteriorated condition of the paint finish is much more apparent.

High-power vacuums and brushes were used initially to remove the bulk of the dust. The dust was slightly oily and required some agitation before the vacuums could remove it. In areas where there had been a lot of soot, some of the gold ornamentation was found to be permanently dulled.

Stabilization and Repair

After cleaning the ceiling, a full assessment of the structural condition of the plaster could be made. There are several steps to stabilize failing plaster of the type found in Gould Memorial Library. We work over the entire surface of the ceiling, visually inspecting for faults as well as sounding the plaster for invisible damage. Sounding involves lightly tapping the plaster by hand or with a rubber mallet. By nature, this plaster is inconsistent in thickness and support, and sounding reveals a variety of noises. A loose rattling sound of plaster knocking against plaster or substrate indicates an area of instability.

All the arch bands were in very bad condition. Prior to consolidation, large portions of the bands were threatening to collapse with the slightest encouragement.

Some faults are so obvious they do not require sounding to determine that they are structurally significant. Once identified as an area for repair, the fracture is injected with an alcohol pre-wetting agent. This agent cleans dirt and debris from the fracture as well as preparing the plaster to absorb the injected acrylic consolidator that is applied next. In cases where a structurally significant fracture is too narrow to fit a hypodermic needle tip, a small hole (1/16” – 1/8”) is drilled to inject material.

After pre-wetting a fracture, an acrylic consolidator is injected into the crack. The acrylic penetrates deep into the fracture and slightly into the exposed edges of bare plaster that have been pre-wet. This acrylic is drawn into small fissures and porous material it would not penetrate without a pre-wet. Finally, an HPCS-formulated adhesive – based on the same acrylic as injected earlier, but much more viscous – is injected into the crack with a hypodermic-tipped caulking gun.

The condition of the finish on the ribbon band encircling the oculus above the upper hall was excellent, so the utmost care was taken to preserve it. Properly pre-wet cracks in the band absorbed the low-viscosity, injectable acrylic with a minimal amount of leakage, thus avoiding damage to the original paint.


Some fragments of plaster had been lost from this damaged area of the ceiling. A previous attempt had been made to obscure the damage by painting the bare plaster gray. We used plaster of Paris to remodel the missing edge.


During cleaning, a large portion of the fractured area became dislodged and fell from the ceiling (photo on left). The portion of egg and dart was saved and re-adhered. The flat panels were repaired with plaster of Paris.

The stark white areas in these photos are HPCS repairs. Over the entire work surface there were about twenty chips and dislodged bits of plaster that were apparent enough to warrant this type of repair.

About half-a-dozen leaf tips were re-sculpted on the cross vault borders. The photo on the right shows a remodeled leaf tip that has been painted. (The background beige had not been applied at the time of this photograph.)

This rosette became detached when sounded. It was reattached successfully to the tile substrate using HPCS acrylic adhesive. A half-inch hole was drilled through the center of the rosette and a stainless steel anchor was installed as a backup safety measure.

Replication of Ornamentation

A large percentage of the original applied plaster Greek key strips and roundels that surround the coffers were in various states of deterioration and delamination. Many of the damaged original pieces were salvageable, and in all cases this was preferred to replacement with a replica. About twenty-five of these ornaments had fallen from the ceiling prior to our work. Fifteen more were found to be damaged beyond repair. From sounding the remaining key strips and roundels that appeared to be in good condition, we found that about 60% in the lower entry hall were delaminating from the ceiling and were in need of stabilization.

Prior to cleaning, several key strips were dangling from the ceiling and several more fell off in our hands with the slightest touch. Past attempts had been made to conceal some of the missing decorations by painting the bare white plaster a dirty green color. We replaced all the missing or severely damaged ornaments with accurate replicas.

Rubber molds were made to produce the replica parts. Replicas were cast with plaster of Paris and a fabric strip was set into the back of the parts similar to the originals. The fabric makes the thin plaster parts more durable.

This is the southwest side of the lower entry hall ceiling. Masking tape was used to secure the reattached ornaments while the acrylic adhesive coalesced. Some unpainted replicas are also in place in this photograph. Due to their weight, the replica Greek key strips were held in place with screws while the adhesive set.

These photos show the original and replica ornaments before and after painting. The rubber molds used to make the replicas were cast from original ornaments, and once painted, the replicas became difficult to tell from the originals, even at arm's length. These photographs were taken before the beige background had been painted.

Painting

Three different finishes were applied to separate components of the ceiling. The background was repainted in its entirety, both the upper and lower domes were refinished, and the gold ornamentation throughout the ceiling was touched up where necessary.
The extent of damage was such that, following the structural and cosmetic repairs to the plaster, full repainting of the ceiling background was required. Over the whole ceiling the color of the background was exaggeratedly dark due to previous inept cleaning attempts. The condition of the paint in the lower entry hall necessitated a full repainting of that area. Since it has been determined that the original color of the background is significantly lighter than how it appeared before our work commenced, it makes good sense to have repainted the whole background with the right color. The Munsell Color System No. for the background paint

throughout the subject area is 2.5Y 7/2, which best corresponds to a commercial product by Pratt & Lambert numbered 2204 and called Edmund's Beige. This paint has a completely flat, no-sheen finish.

The gold-painted surfaces of the two domes were completely deteriorated and destabilized before we began our work. The color we used to repaint the domes consisted of a yellow base coat and an amber glaze with mica stippled over top to produce an iridescent, textured surface quality the same as the original finish. The yellow base coat was matched to numerous examples of the original yellow base coat that had been applied to much of the ceiling.

The gold paint on the rosettes and surrounding ornamentation was touched up or repainted where necessary. The gold varies in sheen and color throughout the site. To match this, an acrylic-based paint was made and then small amounts of this paint were tinted to correlate to specific areas.

Before and after painting.

Cutting in with beige around the gold ornamentation was done in one coat, as the original had been. The top of the photograph on the right shows an area that has been repainted, while the bottom is the original coat. At close inspection, brush marks are visible in both. Beyond six feet they both appear to be a uniformly opaque coat.

Most of the gold ornamentation in the lower entry hall needed touching up. Paint was mixed in small batches, or mixed while being applied, because of the great variability of the original color.

The photograph on the left shows an area behind a rosette in which some of the yellow undercoat did not get painted over by the original painters. This was very useful evidence in determining how to recreate the finish on the domes. Areas like this, hidden from view from the floor and with original finishes, were left as a record of what had been done to this building. Our paint coat leaves visible some original background with the undercoat.

The photograph on the right shows a faint pattern of square patches on the lower dome. This tells us the textured finish coat of the dome was applied in a jabbing motion with a large square stippling brush.

The upper dome with a yellow undercoat applied. The original finish of the ribbon band around the oculus was in perfect condition, and repainting it was unwarranted.

The first stippled coat is being applied in this photograph. We used a square brush about the same size as was used originally, and applied the paint in a jabbing motion.

The final coat is applied to the sunburst of the lower dome. The sunburst was very soiled and there was much more paint missing than on the ribbon band of the upper dome. Repainting was necessary.

The finished lower dome.

The finished upper dome.

Conclusion

This report outlines the successful completion of the stabilization and restoration of the plaster in the Lower Entry, Grand Stairway, and Upper Hall ceilings of Gould Memorial Library. This work is the second phase of a larger effort to stabilize all the plaster in the GML that poses a life-safety risk. Prior to this phase of the overall stabilization process, many ornamental details had fallen off the ceiling and many more were at risk. The completion of this work makes the Gould Memorial Library a safe building to work in and enjoy.