DISPLAY AND STORAGE OF HISTORIC FLAG COLLECTIONS: A HOLISTIC APPROACH

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INTRODUCTION

The 1861-65 American Civil War may well have created the world's largest collection of locally produced flags. The staggering human cost of this war altered the American character and made the Union flag the national symbol. The flags, created for tactical reasons, were preserved for emotional ones.

Figure 1. Images of *Halls of Flags* at Rhode Island, Providence, RI; Lansing, Michigan; Des Moines Iowa.

State Houses located at the capitols of each state became the protectors of these collections, often housed in elaborate carved oak or brass cases in spaces often called the *Hall of Flags* (**Fig. 1**). These halls were furnished with marble pillars and floors, featured large brass chandeliers and painted murals in keeping with a people's place of reverence. For many people, these historic battle flags offer a way to connect with history or with ancestors who fought in our nation's wars. The states' flags therefore hold a profound symbolic value both to the government and its citizenry.

The flags originally tended to be positioned as decorative displays on their staffs, and as collections grew with additional conflicts, they tended to become more compact and static. The visitor's ability to view individual flags was also reduced.

CONDITION ISSUES

The flags in these state collections are constructed of mainly silk, but also include wool and cotton fabrics. They are then embroidered and painted. The benefit of the embroidery is that the fabric behind is hidden and thus is in better condition, being both stronger and less exposed to light (**Fig. 2**).

Paint is found on all fibres used to create flags. But in the 19th century, embellishments on silk are found to become stiff and brittle, developing cracks in either direction. Painted flags are often found folded, done when all of the layers were still flexible (**Fig. 2b**). Now that same flag requires a careful humidification treatment just to open it up.

Figure 2. a) White silk fabrics often are the most deteriorated, resulting in slits or fracturing. The red dyed silks often has bleed or faded. b) Painted regions are stiff, becoming more brittle and crack over time. Oils from the paint can leach out of the paint and weaken the surrounding silk fabric.

An interesting phenomenon of paint is that the oils in some case can leach out to deteriorate the surrounding fabric. Frequently, a shadowing effect can be seen surrounding a painted element or area. Often this means that the fabric was insufficiently prepared, allowing the oils to migrate from the paint into the support fabric. With stars, this can result with them actually falling out of the silk. Another effect is a waxy-like deposit that forms on the upper surface of the paint layer itself. The full reason for this is not fully understood. However, what might be at play is a reaction of the paint with the chemicals of the support fabric, such as the bleaches or detergents, used in the processing. Such a reaction would be called saponification. Some flags are fortunate to still retain their associated tassels, and ribbons. Each of these associated parts must be examined and treated.

The applied painted or embroidered regions are quite heavy. Since the support fabric above deteriorates and gravity takes its toll, the fabric can no longer support the added weight. As a result, decorated regions are frequently found hanging or have separated. When this is observed, the best course of action is to place the flag horizontally.

The care and subsequent treatment of State collections has been quite varied. Many in the early years were taken as souvenirs, a lamentable tradition that spanned continents. As with all countries, the United States has its own history of preservation and those who were the early drivers.

INDIVIDUAL TREATMENT

The flags' tattered conditions led States to make attempts to preserve them. Each type of treatment popular at the time provided an illusion of strength, but hastened disintegration. The deterioration caused by handling and well-meaning restoration measures were aggravated by environmental conditions. Over time, the fragile materials began to require attention and stabilization. Flags were treated individually.

In the United States, early flag preservation can be illustrated by a trail of women (Thomsen 1987; Lenthe 1995; Trupin 2003; Spicer 2014) (**Fig. 3**). Many were mother and daughter teams who were instrumental in preserving the flags that are in practically every state. We might think that the techniques that they developed were not optimal, but in many cases, their intervening preserved the elements and fragments. Had they not, we might have fewer flags in collections. Conservators are mindful that even our current practices that evolved from their techniques might be considered antique in the future.

These women really knew their art. They brought their skill to each of the techniques. However, they all simply unstitched parts, for reassembly, fragments and other parts were rearranged to create an improved presentation, an approach no longer considered acceptable. In addition, their approach was to allow the flags to be returned to their staffs and continue on display in the *Hall of Flags*.

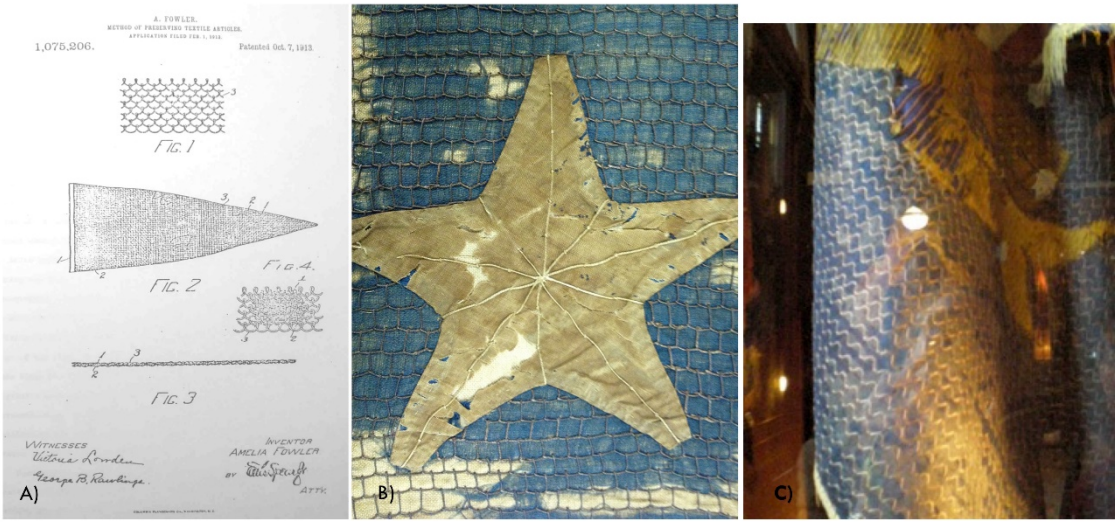

Figure 3. a) Amelia Fowler (1862-1923) patent technique. Flag stitched to linen with button-hole like stitch. Stitching performed overall to provide support. One does need to revisit their stability. B) Detail of the ? Flag. C) Katherine Fowler Richey (1889-1949) who introduced the sewing machine and the zigzag stitch on the surface. Josephine Roser (d. 1995) continued this practice, combined with Nylon net.

CURRENT CONSERVATION TECHNIQUES

In the present day, if the flag is not considered sturdy, conservators continue the use of sandwiching, now called "encapsulating", to treat fragmented flags. The location of stitching is a main modern difference. First, all stitching on an artefact is done by hand in areas of loss and on more sturdy areas like the seams, but not in areas of weakness, Thus, the concept of stitching in a specific pattern, grid or otherwise is not possible. The sheer fabric now predominately used is a knitted nylon net made by Dukeraies. This net is made of fine thread and is very soft to the hand. It comes in white, requiring custom dyeing to a preferred shade.(**Fig. 4**)

Figure 4. A large flag being encapsulated with sheer knitted fabric positioned on top with support fabric behind. The predominately used knitted net is made with fine nylon threads and by Dukeraies in the United Kingdom. The net is very soft and comes in white, requiring custom dyeing.

Current conservators also rely on a sturdy support for the preservation of the flag (Spicer 2013a & b). Thus flags are not returned to their staffs. Many of the former stitching methods were used to be able to "rehang" the flag. Having the flag out flat fully supports the flag while allowing the viewer to fully see the imagery of the flag.

The most common mount in the United States is what we call the pressure mount. In its most basic form it includes a relatively lightweight but solid support of aluminium honeycomb material that will not distort with changes in relative humidity. A doming effect with the needle-punch batting layers is created to compensate for the curvature of the Plexiglas and covered with display fabric (Spicer 2011) (**Fig 5**).

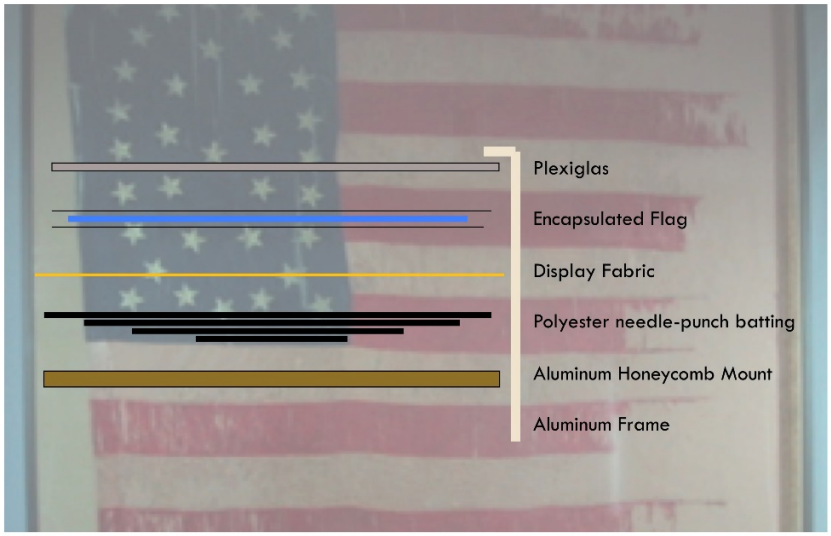

Figure 5. The pressure mount is created with layers of material to provide overall pressure to evenly support the fragile flag.

The stabilized flag, encapsulated or not, is placed on the prepared mount. A layer of Plexiglas is placed on top of that and all are secured with a frame. The preparation of these mounts in the various possible sizes is also an art, requiring a conservator to acquire an intimate understanding of the number and sizes of the layers. Textile conservation is beginning to re-examine this technique; hopefully, various scientific specialties will be involved.

STATE COLLECTIONS

The great majority of state collections have flags beginning with the Civil War (1861-65) to the present day. However, a few states also have flags from the Revolutionary Period (1776-90). These flags are both national and regimental flags, decorated with exquisite embroidery or painted, frequently done with silk and chenille threads, or occasionally with metallic thread. As with other countries' national flags, great pride in the workmanship of these artefacts is obvious.

Mounting individual flags is costly and time-consuming. The earlier approach preserved the flags as individuals with a mass production technique. In the 1980s Pennsylvania was one of the first states to look at their collection with new thinking. They systematically removed all of the flags, documented, humidified and rehoused the entire collection flat on large racks of 500+ flags (Ashton 1987). Massachusetts' 300+ collection of flags has also been removed from the cabinetry, but due to limited space, rolled their collections. President Abraham Lincoln's home state of Illinois has provided flat storage for their 1,000+ flags. The largest collection of state flags belongs the New York State, which has almost 2,000 flags. The sheer volume of such a project is challenging and requires a variety of solutions.

Such large projects are not always completed, often stalled due to limited budgets or changes in administration. However, if a collection is fully stored flat like Pennsylvania and Illinois; the collection is preserved for the next generation of conservators and collection managers. Most states have a partnering museum or other state agency to allow the flags to be rehoused and or displayed. This allows the *Hall of Flags* in these states to retain their original character while also either housing reproductions or a single mounted flag.

States have been struggling with how to preserve their collection, while making them accessible to the public and cost effective. Two case studies are presented here, one completed, the other in progress, both introducing a holistic concept and approach to flag preservation.

Many issues need to be considered when designing a project to best care and preserve a flag collection. The proper display of historic flags is often expensive and their mounting cumbersome (Thomsen 2003). Flags are fragile and have often been poorly stored. Are the flags on permanent display, as was traditional, or can a rotation policy of the collection be implemented? And how? The conservation and preservation of a State's flag collection is a story of preservation, access and affordability, with much possible due to the collection's past history and restorations.

MAINE STATE'S BATTLE FLAG COLLECTION

The state of Maine has an extensive collection of 330 flags and banners dating from statehood in the 1820s to the 1990's Desert Storm campaign.

The challenge for the Maine State Museum team was to make the flags more accessible through interpretation and visibility while retaining the original presentation in the Hall of Flags.

Figure 6. View of the *Hall of Flags*, ca. 1872, at the Maine State House, Augusta, ME. Note the careful arrangement of flags in the case. This design involved tacking flags to the wall and cutting off many staffs so flags would fit. Captured Confederate flags are visible through the arched door to the left. These flags were repatriated in the 1920s. The *Hall of Flags* in 1998.

Cramped storage conditions and prior treatments complicated the matter: in the 1960s a third of the flags were machine-sewn between layers of nylon netting (Harvey 1993). Only a small percentage was returned to the State House (**Fig. 6**).

Working with conservation consultants, Museum staff replaced the flags in the Hall of Flags with replicas, cleaned and stabilized the originals, mounting them on exhibit-ready panels, and organized exhibits with flags rotated every six months. The two-year project employs highly capable conservation technicians with project-specific training. It uses a system that combines display and storage, designed so that mounted flags are easily rotated from closed racks below to a slanted top surface, allowing easy rotation with minimal staff. Rotation, interpretation and on on-line photo gallery dramatically have increased public access to the collection (LaBar and Spicer 2003; Spicer *et al* 2003; Owens 2012). At the same time, the *Hall of Flags*, Maine's ceremonial heart of government, retains its historic appearance without compromising fragile symbolic artefacts.

The Maine State Museum wanted a protected, long-term, climate-controlled display of their collection. An exhibit space was designed both to store and display their collection. The collection was mounted on covered aluminium honeycomb panels and stored in carts. Three short carts, each holding eight flags, were installed in the exhibition gallery behind glass. The space on top of the carts was designed to display the mounted flags on a slope. Given the limited museum staff time, having storage within the display facilitated twice-annual rotation. When the rotation of all 24 flags is complete, these flags will be replaced with others from off-site storage.

CONSERVATION

Survey

The first step was to survey the entire collection. This provided the groundwork for better understanding the condition, sizes, and variety of types as well as a general overview of the collection. A notable finding was the extent of the collection treated by netting by Mrs. Josaline Rosser in the 1960s, including 98% of the Civil War flags. The flags in worst condition were those that had been exhibited the longest in the Hall of Flags. During the 1970s, some rotation of the flags occurred. However, over time this practice had stopped and the flags in the last group showed severe diagonal losses due to the light exposure. These were determined to be the flags most at risk. Fortunately, black and white photographs of most of the flags were taken as they were removed from the cases in the Hall of Flags before they were sent to Mrs. Rosser. This allowed us to locate her fills and determine the condition of each flag before her work.

Also at this time data-loggers and Blue Scales textile fading cards were placed in the Hall of Flags to accurately monitor temperature, relative humidity and light levels. This data was then used to convince the State legislators and others of the importance of the flags' removal.

Conservation Team

A dedicated team of qualified workers with varied, complementary backgrounds was selected. The team comprised the curator, two conservators and two flag technicians. In addition, museum conservation technicians provided support, set up the initial lab, and oversaw environmental monitoring and material selection for the final exhibition in the Hall of Flags and museum. Both flag technicians had extensive sewing backgrounds. Marion (Toosie) Scharoun was a coach trimmer and has operated a custom sewing business.

Donna Smith has worked in the conservation lab at the museum since 1993 and was familiar with the philosophy and ethics of conservation. These two women were to treat the collection with the oversight of the conservators and curator.

Training of Team

The team was trained in an intensive week of basic flag conservation techniques, including documentation and photography, vacuum-cleaning, humidification and relaxation, conservation stitching, preparation of the mounts, attachment to the mount, and fringe stabilization. During the first week, the technicians learned to understand the nature of fragile fibres, especially silk.

Training first focused on the mounting of the netted flags. Procedures for record keeping, note taking and photography were established. Since they would be performing the duties mostly on their own, there was extensive discussion on knowing when to stop and ask questions, while encouraging them to think on their own. All techniques and steps were originally performed under the guidance of the conservators. During the course of the next two years, more extensive training occurred encompassing stabilization treatments on the non-netted flags. In the course of each visit by the conservators, the technicians gained more breadth and in-depth experience.

Since the current stabilization plan involves laying flags flat, the new storage cases from SmallCorp were sized to fit the flags, not the floor-space, and based on the size of the flags (Civil War guidons and regimental flags, as well as military regimentals from the mid 20th century make up most of the collection), three panel and case sizes were provided.

Cart Design

Each of the carts or "Rolling Storage Carts" are designed by SmallCorp, with a powder-coated aluminium frame and shelf supports for each mount (**Fig. 7**). The sides, top and bottom are covered with 3 & 4 mm thick sheets of rigid aluminium sheet with a polyethylene core. UHMW tape (ultra-high molecular weight polyethylene) was applied to the top edge of each shelf support, allowing the mounts, especially the larger ones, to slide easily.

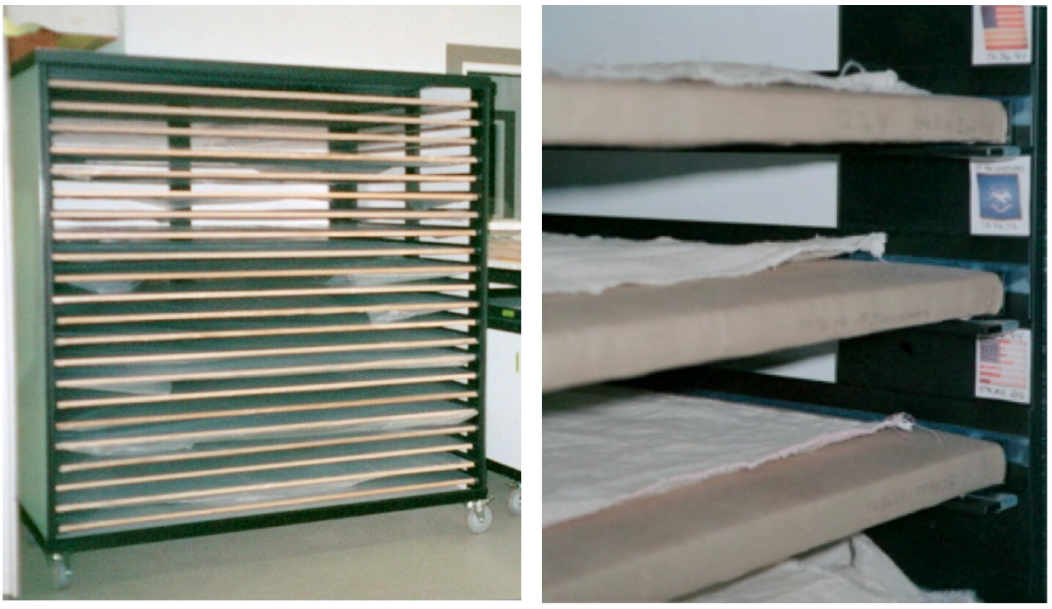

Figure 7. a) Additional storage baker racks, made by SmallCorp, with prepared display and storage panels, located in the off-site museum storage. B) Detail image of prepared panels in racks with flag identifiers.

Each cabinet has heavy-duty, total locking swivel casters appropriate to the size of the cart. One of the exhibit cabinets was put on gliders to fit a space under stairs. The large and short-sized carts were shipped in five pieces clearly labelled for ease of handling and lower cost of shipping, and assembly and moving through smaller doorways.

Flag Mounting

Each flag was mounted onto an aluminium honeycomb panel in one of four sizes.[1] The panels were each covered with needle-punch batting and cotton display fabric. Glides made of "L" shaped aluminium powder-coated strips were attached with screws to the two sides. The flags were laid on top, positioned and secured.

Adapter Bar

During the course of the project, a new size mount was introduced, made possible by Adapter Bars. These bars are "L" shaped in cross section, are as long as the width of the storage cabinet, and secured to the front and back edges of the mount with Velcro buttons. While storage unit size was based on that of majority of flags, several important flags did not conform to the "standard" sizes. With the adapters in use, a few smaller panels could be ordered and stored in place of larger panels, allowing a custom-fit for flags of unusual size.

EXHIBITS DESIGN IN THE MUSEUM

Great care was taken to ensure that the climate in each of the exhibit cases was as stable as possible. The museum is of a 1970s design with minimum climate and no relative humidity control, typical of that era. A method was needed to limit fluctuations. Testing with data-loggers, simply creating a sealed case was found to be the remedy.

Museum staff designed two display cases that incorporate hidden storage units. The large case accommodates two of the largest size panels and storage units, positioned side-by-side. It also accommodates a data-logger. The smaller case displays a single flag. With the use of extenders in the storage areas and covered label panels to fill in display areas, each exhibit case can accommodate two different sizes of panels [see photo below]. This allows for the greatest flexibility to display all of the flags from the collection.

Figure 8a) The large double capacity flag case located at the Maine State Museum, Augusta, ME, display two flags together. The case functions as both a display and storage unit. Storage for flag rotation is hidden behind the cloth-covered panels bfuture short-term displays. The flags are within the exhibition location to aid in easy rotation. elow the flags. B) Below, are two storage racks of prepared flags in easy position to be rotation.

The flags on display are supported by "extra" honeycomb panels, held in place by angle-iron supports. Short versions of the storage carts are located below the display surface. The open fronts of the storage cases are covered with Tyvek to exclude dust and permit air circulation. Their top surface is camouflaged with cloth that matches that used elsewhere in the gallery. Cloth-covered panels disguise the storage front. Visitors have no visual clues that upcoming flags are stored within the gallery (**fig. 8**) – eight flags in each case. Rotating the flags takes less than an hour of staff time. The displayed flag simply slides out and is placed into storage, and a new one replaces it.

Lighting the flags was a major concern for museum staff. Fibre optic lighting proved to be the solution. The double display case contains two fibre optic units, each of which can accommodate 32 strands. This enabled the exhibit team to light the case and its back- lit label panel, as well as an adjacent case displaying flagstaffs. Most of the light on the flags is directed from the front, where a narrow screen of painted aluminium hides the fixtures from view. In the back ceiling of the case, staff created custom-recessed light boxes to hold each fibre optic fixture, consisting of black film canisters with a hole drilled in each base to accommodate the fibre optic

cable. The smaller display case also houses a fibre optic lighting unit, used for the flag case as well as an adjacent case.

The exhibit team's goal in lighting was to illuminate each flag with no more than 5 fcs or 50 Lux. With fibre optic lighting, preparators achieved light levels of 2.5 fcs or 25 Lux. Because the overall lighting in the gallery is subdued and the lighting provided by the fibre optics is even across the flags, this low light level of 2.5 fcs is adequate. In addition, case lighting is tied to motion sensors, further reducing the amount of light to which each flag is exposed. Concerned with the total light exposure time of our most sensitive flag, the museum conservation staff installed a light on/off data-logger. This device, along with the motion detector, will determine the fcs exposure /season or year, such information allowing an informed decision on display time.

NEW HAMPSHIRE STATE'S BATTLE FLAGS

New Hampshire does not have a state-run museum as in other states with which they partner. New Hampshire is a small state and so a small building considered as the State House in Concord, NH serves for flag display. There are few options for either storage or display of their collection that includes 104 flags (Spicer 2012) (**Fig 9**). With no dedicated staff or personnel, and no allocated space outside of the Hall of Flags, moving the flags off-site was not an option.

Another scenario needs to be devised that meets their needs and limitations. The complete collection of flags needed to be stored and displayed within the Hall of Flags, leading to the decision to alter the original cabinetry lining the walls. Their alterations will be done to maintain the aesthetic nature of the interior while providing modern environmental conditions.

Another unusual aspect of this collection is that they have never previously been treated. It is actually unknown when the cases were last opened. Staff suspects that the later cases were built in 1953. Otherwise these flags have been entombed. However, in the last couple of years, deterioration of some of the flags has been seen. Black and white images of the flags were taken before they were positioned into the 1910 cases., the sole extent of documentation and records available.

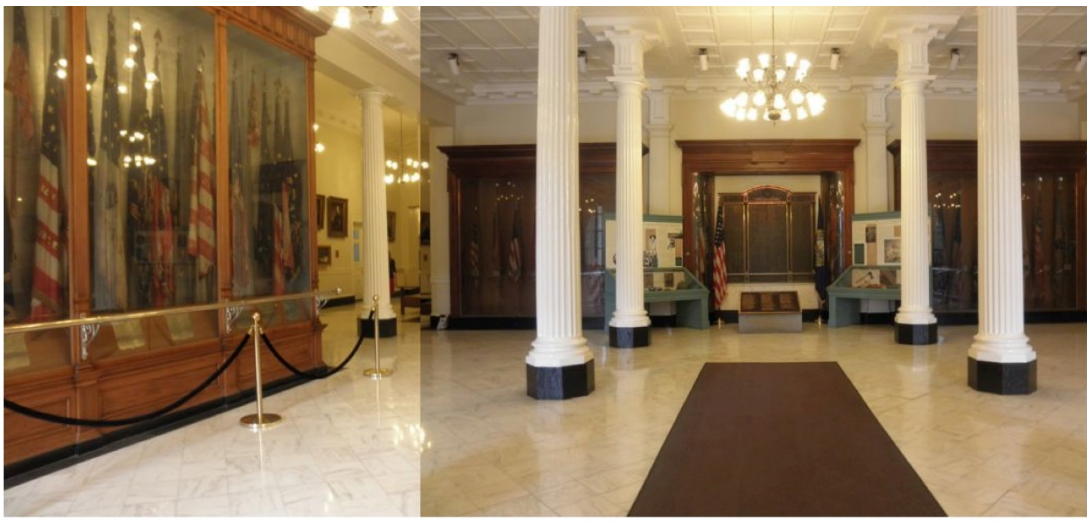

Figure 9. The *Hall of Flags* at the NH State House, Concord, NH in 2015, where 104 flogs are on display. The large case on the left side contains about half of the Civil War flags. A second similar case is located opposite with the other half of the collection. Along the back wall are flags from twentieth century conflicts.

The immediate goal is to remove the collections from the cases, fully photo-document each flag front and back, and to lay each flag flat onto solid support panels for temporary storage. The images can then be accessible electronically to the public in a method that more exhibits what the actually flag looks like. The planning stage of the project is determining the construction of the cabinets as well as the other alterations to the physical structure of the Hall.

Budget

At first glance, the budget for the project appears robust. The State Legislature appropriated $200,000 for the project that was subsequently used as match for a grant from Save America's Treasures. This grant provided another $200,000. Some additional monies were available from Save Maine's Colors. This provided support for an assistant curator as well as donations earmarked for the stabilization of particular regimental flags. Because the flags are being stabilized in-house, and the panels are designed to go from storage to display, the costs of stabilizing each mounted flag is one-third to one-quarter the price of early estimates for their conservation. The cost per flag is far below the standard cost for the full mounting of a fragile flag.

CONCLUSION

The goals of the Maine State Museum's flag project were two-fold: to stabilize the flag collection and to increase public access to the flags. Through the stabilization plan, the installation of replicas in the Hall of Flags, an exhibit, and web access, the Museum achieved those goals. Thanks to such a creative-thinking and able team, the museum was able to accomplish this work far below original cost estimates. New Hampshire has similar goals for their battle flag collection. By creating a plan and public enthusiasm the collection will be preserved for future generations.

END NOTES

[1] The four sizes are: large, 89" x 90"; intermediate, 63" x 71"; medium, 52" x 62"; and small. 36" x 44".

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ILLUSTRATIONS

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