



Museums for America

Sample Application MA-30-16-0154-16
Project Category: Collections Stewardship
Funding Level: \$25,001-\$150,000

Henry Francis du Pont Winterthur Museum

Amount awarded by IMLS:	\$110,759
Amount of cost share:	\$147,450

Attached are the following components excerpted from the original application.

- Abstract
- Narrative
- Schedule of Completion

Please note that the instructions for preparing narratives for FY2017 applications differ from those that guided the preparation of previous applications. Be sure to use the narrative instructions in the FY2017 Notice of Funding Opportunity for the grant program and project category to which you are applying.

ABSTRACT

The Conservation of Silver and Copper Alloy Objects project is part of a multiphase institutional initiative to treat objects in Winterthur Museum's diverse collections prioritized by greatest conservation need. Winterthur Museum requests funding to support a two-year project to remove failed lacquer coatings, conserve, polish, and coat approximately 500 of its most vulnerable silver and silver alloy objects, to continue analytical research related to silver surface corrosion, and to commence new research on corrosion and coating issues for its copper alloy collection whose conservation will be addressed in Phase III. The proposal addresses critical conservation issues for this collection and is Winterthur's highest conservation treatment priority. This Collection Stewardship project will allow continued safe maintenance of and access to the collection by visitors, scholars, and students in the coming decades. It will also bring quantifiable results from nearly thirty years of lacquer coating practices and analytical research to the international conservation community through publications and presentations. Public programs held throughout the grant project period will allow Winterthur to continue in its mission to educate general audiences in techniques and best practices of object care.

Subject to funding, this project will begin in October 2016 with the hiring of two, IMLS-funded conservation technicians with undergraduate or graduate conservation training who will be trained to clean and coat metallic surfaces during the two-year project activity. A part-time conservator funded by the IMLS grant will assist the objects lab with routine functions for loans and exhibitions while the senior objects conservator manages this project and staff. Beginning in the 1980s, Winterthur chose to lacquer coat its metal objects on open display in museum rooms and galleries to prevent damage caused by the repeated polishing necessary to maintain an aged, yet historically appropriate surface. In Phase I of this project, 500 silver objects either coated before 1985, exhibiting corrosion, or exhibiting severe coating failure were treated. The current project addresses silver objects coated before 1990, thus completing treatment of the remaining at-risk silver objects. As part of this phase, the project team will continue silver corrosion research begun in Phase I, employing TOF-SIMS and micro XRD analysis to better characterize the corrosion products and any coating-to-metal surface interaction. This research will improve our understanding of the corrosion associated with coating failure and its impact on the objects. Winterthur scientists will also begin similar research into corrosion issues associated with copper alloy objects. Earlier in 2015, the copper alloy collection was surveyed, revealing evidence of possible adverse coating-to-metal interactions that will require further analysis in order to make an informed coating choice for these objects to be treated in Phase III.

Winterthur Museum's collections are historically significant artifacts that are instructive to visitors while on display, but are also teaching tools regularly handled using best practices by staff, students in the graduate conservation and material culture programs, and researchers; without coating, this degree of access would create unacceptable risk, and inhibit valuable study of these objects. Successful completion of this project will insure the preservation of Winterthur's silver collection while on view and in study settings, meeting its educational mission without compromising collection safety. Through presentations of analytical information gathered during this project, staff will contribute new findings, recommendations, and cautions in lacquer-coating metals that will prove beneficial to conservation and curatorial colleagues worldwide.

NARRATIVE

Statement of Need

Winterthur Museum, Garden & Library is a multifaceted, internationally recognized cultural organization consisting of a world-class museum with 175 rooms and exhibition galleries, a thousand-acre garden and estate, a specialized research library, and an intellectual research center for object-based inquiry with two graduate programs: the Winterthur Program in American Material Culture (WPAMC) and the Winterthur/University of Delaware Program in Art Conservation (WUDPAC). Winterthur's Board of Directors has identified preservation of its collections as the institution's highest priority as expressed in its Vision and Mission Statement: "to inspire, enlighten, and delight all of its visitors while preserving and enhancing its buildings and landscape, its collections and programs, and its history as a great American country estate."

Henry Francis du Pont, Winterthur's founder, created an unparalleled collection of fine and decorative arts, including silver and copper alloy objects whose study and conservation are the subject of this grant proposal. This collection includes approximately 2,900 silver and silver-plated objects and slightly over 2,050 copper alloy objects that are displayed in polished condition reflecting an aged, yet maintained historic surface protected by lacquer coatings. The proposal addresses critical conservation issues for this collection and is Winterthur's highest conservation treatment priority. Successful award of this proposal will remedy the museum's immediate need to conserve these objects, and allow for further research and planning for their long-term preservation.

Mr. du Pont envisioned his collection as a museum for the public and encouraged its study and publication. The work of early scholars like Martha Gandy Fales featured Winterthur's silver, while Louise Conway Belden's *Marks of American Silversmiths* (1980) placed the museum on firm footing as a major research center for American silver connoisseurship. With the support of the Henry Luce Foundation for American Art, Ian M. G. Quimby produced *American Silver at Winterthur* in 1995. In preparation for Quimby's book, Winterthur's Scientific Research and Analysis Lab (SRAL) analyzed silver objects and the x-ray fluorescence (XRF) alloy analysis data was included, making it an invaluable resource for scientists as well as scholars of American silver. Likewise, the copper alloy objects published in Donald L. Fennimore's *Metalwork in Early America: Copper and Its Alloys from the Winterthur Collection* (1996) include XRF data with each catalogue entry. This seminal catalogue provides valuable materials research as well as cultural history for base metals and alloys used in an early American context. These texts and other publications and presentations by Winterthur curators and conservators have positioned conservation of the collection in the forefront of current scholarship.

Preventive conservation standards maintained at the museum, as in any historic property, are challenged by the open display of silver and copper alloys objects in the museum rooms where oxygen and low level pollutants in the ambient environment cause ongoing corrosion. The majority of the collection, including cooking, dining and drinking vessels, flatware, lighting devices, personal jewelry and spectacles, is displayed on historic architecture and furniture, or in open cabinets. Preventive conservation technicians regularly dust the metal objects as well as the rest of the artifacts. Preservation of the collection is also influenced by the museum's teaching mission: much of the silver and copper alloy objects are regularly handled by museum staff, graduate students, and researchers in special workshops (instructed in proper care and handling skills). This level of access is a unique feature of Winterthur's educational programming among peer institutions in the field.

Winterthur's Conservation department (established in 1965) of 21 staff regularly care for approximately 90,000 objects plus a library collection of 87,000 volumes and over one million

manuscripts. They actively conserve and teach with the collections annually. Winterthur's conservators are recognized as leaders in their field and have created the *Guidelines and Procedures for Preventive Conservation Manual* and *Collection Emergency Plan*, serving as a model for other institutions. Conservation and preservation planning are a part of every collection-related activity at Winterthur, and staff lead in the conservation field, most recently as partners in the recently created Collection Care Network of the AIC.

Federal and private funding has been critical in helping Winterthur care for the most vulnerable parts of its collections when these needs have exceeded the available operational resources. Winterthur has successfully applied for and completed several IMS/IMLS grants over the last decade. With this funding we have been able to recatalog significant portions of the collection, stabilize and rehouse library collections, treat unusual objects like historic wallcoverings, upgrade our scientific equipment, and treat objects as part of the first phase of this larger coating project. (*See supportingdoc1.pdf*)

Assessment of the museum environment and surveys of the collection are ongoing. Information gathered is incorporated into the department's conservation planning. Winterthur's overall conservation plan is embodied in the State of the Collections (*see supportingdoc2.pdf*) updated biannually in consultation with the curatorial staff. The last overall survey of the collection occurred from 1997 to 2001 in which 60,000 objects were assessed, and several hundred high priority objects were identified and treated. Focused surveys, such as the ones completed in the preparation of this proposal, are undertaken as needs are identified. The need to assess coatings on the silver and copper alloy collections and begin a recoating program has been an increasing concern for the last decade. In 2008, associate curator of decorative arts Ann Wagner and senior objects conservator Bruno Pouliot presented arguments identifying it as the museum's highest conservation priority.

A 2009 survey of the silver collection revealed that objects are experiencing widespread and potentially damaging lacquer coating failure. The lacquer applied to objects in the 1980s has reached the end of its life expectancy and needs to be replaced. The survey revealed that 80% of the collection was lacquered. Among those pieces, 58% of the coatings were in good condition, while 42% showed varied forms of serious coating failure. Most failures appear to be a result of age, application defects, the presence of moving parts such as hinged lids, and the complexity of the surface topography. (*see supportingdoc3.pdf*)

A copper alloy survey in 2015 confirmed that this collection also faces significant coating issues that will require research before designing a recoating program (*see supportingdoc4.pdf*). The survey revealed that half the collection was lacquered: 30% of lacquered objects had coatings in fair to poor condition and 60% had been lacquered with the nitro-cellulose coating Agateen 2B that may be causing a harmful metal to surface coating interaction. The results of these surveys, discussed below, confirmed that recoating of the most vulnerable parts of the silver and copper alloy collections should remain the highest treatment priority for the museum collection.

Winterthur staff designed a three-phase program to address the needs of its at-risk silver and copper alloy objects. Phase I, completed in 2013, provided conservation treatment for silver objects coated before 1985, for objects with lacquer that exhibited significant coating failure, and for a group of uncoated objects. It also investigated issues responsible for coating failure. The second phase, outlined in this proposal, will provide conservation treatment for silver objects coated between 1986 and 1989, and for additional un-lacquered objects. This project will also continue the corrosion research on lacquered silver, while beginning an investigation of issues related to corrosion on coated copper alloys and interactions observed between Agateen 2B coating and the metal. Results of this research will dictate the design of the third phase that will address lacquered copper alloy objects. At the end of the

third phase, Winterthur plans a symposium designed to share research and experience in metal coatings with curators, conservators, and collectors.

History of coating program on silver and copper alloy

Care of the silver and copper alloy collections was an early concern of the Conservation Department. Regular polishing of the collection, even with the gentlest methods, removes some metal with each cleaning, resulting in softening and ultimate reduction of design elements typical of early American metalwork. For silver-plated objects, the loss of the thin silver display surface reveals the copper substrate. Given the exhibition and handling demands on the collection, the staff commenced a comprehensive coating program in 1982. This program prepared and coated the majority of the collection between 1982 and 1989 although new acquisitions and scattered retrospective objects have been coated since then. When the coating project began, research suggested the life expectancy of the Agateen Lacquer would be approximately 30 years. That prediction has proven to be true – a significant number of coatings have failed, and beyond that, yellowing of the lacquer becomes a visual problem. The program used several variations of Agateen Lacquer, a cellulose nitrate product that provided the best balance of minimal visual intrusion, stability, and tarnish protection. This program was successful, and many museums internationally opted to apply similar cellulose nitrate coatings to their metals collections, whenever the option of closed cases with scavengers was not available.^{1, 2, 3}

In 2011, Winterthur began treatment of the highest priority silver objects identified in the survey, completing treatment of over 500 objects. As the coating has continued to age, the next group of silver coated between 1986 and 1989 has become the highest priority. Since most of Winterthur's silver was coated during the 1982-89 campaigns, completion of this project will leave the collection in excellent condition for a significant period of time.

While most coating failures appear to be a result of age, the objects conservators and curator have growing concern about negative interactions between a degraded coating and the silver underneath. Problems have not been observed in the museum's collections, but examples in private collections with degraded cellulose nitrate coatings have exhibited aggressive tarnishing of the silver as described in Pouliot's 2013 article.⁴ (*see supportingdoc5.pdf*) Study of tarnish and silver-coating interactions initiated during the first IMLS-supported silver lacquer project needs to be continued to fully understand this issue and analyze its significance.

The 2015 survey of copper alloy objects indicates that a large percentage of this collection is also in need of recoating due to both lacquer failure and a coating-to-metal surface interaction related to Agateen 2B, one of the lacquers used in the 1980s. Given the copper alloy coating interactions observed during the survey, research to understand these observations is necessary to determine what coating should be used in Phase 3 of this project that will renew deteriorating coatings on copper alloys. Since Agateen 2B is still used in the field, understanding the observed interaction is critical for all institutions with this coating program.

As a leader in the preventive practice of lacquer coating on metals, Winterthur will continue publishing and disseminating new information generated by this project. Because of its uninterrupted history of protective lacquer coating application on metals and its sophisticated instrumental analysis, Winterthur is uniquely positioned to conduct research and share observations based upon aging within a standard museum environment, offering recommendations and cautions for lacquer coatings on silver and copper alloys. Although institutions such as the Walters Art Museum are investigating promising alternatives to prevent/inhibit tarnish through experiments with atomic layer deposition (ALD) of aluminum oxide on silver, lacquer coating remains the only viable protection currently available.^{5,6}

Project Design

The tasks, schedule, and budget for this project are based on the successful two-year IMLS supported project (2011-13). The current project design has been improved based on lessons learned during the earlier phase, and to adjust to institutional changes. It includes the following activity:

- Hire and train two technicians who will work 3 days/week. Bruno Pouliot will provide theoretical and hands-on training in the causes of silver tarnish, the role played by the coating, removal and application methods of the coating, and tarnish removal on silver. Pouliot has 18 years of experience training graduate conservation students and other interns in appropriate methods for silver care, and he trained the technicians for the previous project.
- Hire a part-time conservator to support existing exhibition needs and routine collection care and treatment projects in the Objects Lab while objects conservator Bruno Pouliot is engaged with this project.
- Set schedule with Registration Office for art handlers to move objects in and out of collection on a weekly basis and for Registration staff to document the moves in Emu, the collection management database. Work with Interpretive and Visitor Services staff to minimize impact on visitor experience.
- Complete condition documentation of each piece in the conservation module of Emu and photograph representative areas of damage using an SLR digital camera and lighting set up designed for reflective surfaces. Technicians will work with conservation photographer and image management specialist Jim Schneck on proper capture, processing and storage of images in Winterthur's image management system which meets AIC documentation guidelines.
- Remove coatings that have failed using either a steamer or the appropriate solvent mixture. The use of a steamer as a method for lacquer removal on silver was used at Winterthur during Phase I of the project and proved to be efficient and safe on historic silver.⁷ Objects that have organic components or attachments, such as wooden handles or ivory insulators that would be damaged by steam, require the use of a solvent mixture. The silver is exposed to the solvent fumes, and the coating then manually removed with absorbent pads, a process that requires care, time, and proper ventilation.
- Silver surfaces will be polished with a slurry of precipitated calcium carbonate, or in cases where the tarnish is more tenacious, with a slurry of aluminum oxide. The use of either of these abrasives on silver represents the standard methods used nationally and internationally for silver cleaning. They remove a minimal amount of silver without causing scratches. The polishing compounds are carefully rinsed off the surface in an aqueous solution and then dried with compressed air. A final degreasing of the surface with a solvent, and buffing of the surface with a Selvyt cloth finalizes preparation of the object's surface for lacquering.
- Apply at least two coats of Agateen # 27, a cellulose nitrate coating without plasticizer, either via brush application or with a spray gun. Both methods are appropriate for most pieces, so the choice balances the advantages and disadvantages of each based on the experience of the user, the topography of the surface, and the complexity of parts and other materials present. Cumarin, a UV fluorescent dye, is included in the coating to facilitate later inspection.
- Inspect the dried coating for any visible flaws and check the integrity of the coating with a continuity tester and UV light. Re-apply accession number atop the coating in an inconspicuous area of the object. A particular color is chosen to indicate the presence of a coating. The treatment is fully documented, and the information entered in the conservation records for each object.
- Continue research on cellulose nitrate degradation and potential surface corrosion through coating-to-metal interaction using Time of Flight Secondary Ion Mass Spectrometry (TOF-SIMS) at the University of Delaware. The previous study confirmed that micro-Raman spectroscopy was below

minimum detection limits required to fully characterize the majority of the silver corrosion products. Toward the end of the project, Winterthur gained access to and successfully analyzed four samples. Additional samples will be run during this Phase II project to insure a meaningful and statistically significant result. A secondary priority is the examination of the silver corrosion products in the lacquer lacunae using x-ray diffraction (XRD). This technique was not available during the first phase of this project, and has great potential for identifying the types of highly crystalline corrosion products commonly observed within coating lacunae. The copper alloy component of the project will involve characterization of objects made primarily of copper, and its brass and bronze alloys. These three alloys were subject to three different coatings - acrylic polymers (minor), cellulose nitrate 2B, and cellulose nitrate 27, creating nine different copper alloy/coating systems to be studied. Fourier transform infrared spectroscopy (FTIR) will be used to identify any alterations in the coatings. Gas Chromatography-Mass Spectroscopy (GC-MS) and pyGC-MS (utilizes a pyrolysis) will be used to identify the plasticizer and dye in the Agateen 2B. The dye (unidentified in the historic record) may be contributing to a warmer coloration observed on these objects. It is hoped that identification of the plasticizer and the dye will contribute to an understanding of the yellow patina/corrosion layer formed on the metal below the coating. These techniques will also provide information about the condition of the coatings. In the event that pyGC-MS does not identify the dye then Liquid Chromatography-Mass Spectroscopy (LC-MS) will be used instead. Finally, for the nine alloy/coating systems, TOF-SIMS will be carried out on three samples of each system to understand the yellow patina/corrosion layer.

- Alloy analysis of the twenty-seven metals that will have coatings removed for corrosion analysis using TOF-SIMS will be carried out nondestructively using XRF, provided that the composition of these pieces is not already published in *Metalwork in Early America: Copper and Its Alloys from the Winterthur Collection* (Fennimore, 1996).
- Project results will be disseminated by Pouliot, Wagner, and Dr. Mass through presentations and publications to specialist and non-specialist audiences. The *Journal of Cultural Heritage*, ICOM-CC metals working group, 2018 Gordon Research Conference, and the International Institute for Conservation (IIC) are possible conservation specialist venues to receive this research. Articles about the project and also about silver care and display will be written in journals and fine arts publications like *Silver Magazine*, the magazine *Antiques & Fine Arts*, as well as interest group newsletters, such as the *New York Silver Society* and the Association of Art Museum Curators in order to disseminate the results of the research to non-conservation specialists.
- Winterthur provides regular tours of the conservation labs to the public and to numerous special interest groups – over 800 guests toured the labs in 2015. During the project, the care of silver, observation of project activities and brief talks from conservators and technicians will be a featured part of tours. There will also be a description of the project in the conservation section of Winterthur’s website and occasional blogs by project staff.
- Winterthur’s Public Programs Department has planned a variety of silver related activities for families, school children, and adults to coincide with the project (*see supportingdoc6.pdf*). Adult programs include silver jewelry classes and a silver-themed selection for the “History Through Fiction Book Club”. Family programs will include a silver themed “Terrific Tuesday” program (a drop-in summer program with craft and conservation themes) and a silver feature for the Conservation Corner, a new interpretive program offered daily in museum galleries. School programs will include a silver based selection as part of the popular “Science Behind Art Conservation” series and a teacher workshop focusing on the application of chemistry concepts related to silver and metal objects. These programs will serve an estimated 1800 learners of all ages.

- To help the public better care for its silver, the Public Programs Department will offer a two-hour program on silver as part of our “Caring for Family Treasures” series. Winterthur will also produce a video featuring Bruno Pouliot talking about and demonstrating silver care including the significant benefits of regular washing and wiping with a Svylt cloth in retarding the formation of tarnish. The video will be mounted on the website and available through YouTube.

Project Resources

The two-year project estimate and budget is based on a similar quantity of objects and treatment program successfully completed during project Phase I. Treatment of objects will be organized by floor in the museum. Curatorial, exhibition, and education staff will collaborate to generate treatment lists to ensure that impact is minimized for the visiting public (avoiding areas of highest visitation during certain periods). Treatment will begin with objects that are simple in form, and then move to those with increasingly complex surfaces, moving parts, and composite materials, allowing the technicians time to master the delicate tasks necessary to successful lacquer application.

The two technicians will work three days per week in conjunction with Winterthur’s conservation assistant William Donnelly. This schedule accommodates the space, time and supervisory staff available and reduces mental and physical fatigue inherent to the repetitious nature of the project. Bruno Pouliot, senior objects conservator, has the greatest expertise in metallic surfaces, and is the most appropriate conservator to supervise the project (which will take 20% of his time, in addition to 50% of his work teaching in the WUDPAC graduate program). He will therefore hire an assistant conservator to work one day/week (20% of fulltime) to maintain the routine duties of the Objects Lab.

This project will involve a number of Winterthur staff. See *keystaff.pdf* and *budgetjustification.pdf* documents for a full list of all staff, their roles, and anticipated project commitment. Project direction will be assumed by the new Director of Conservation who will be in place by Summer 2016. This role is temporarily assigned to Greg Landrey, Director of Library, Collections Management, and Academic Programs, who will oversee any pre-project tasks, including the hiring of the new Director of Conservation. Associate Curator Ann Wagner will work with other staff to schedule objects for withdrawal from exhibition, arrange for the installation of substitute objects where necessary, consult with conservators, scientists, and technicians on treatment issues, and participate in the preparation of professional articles and presentations. Dr. Jennifer Mass, Senior Scientist and head of the Scientific Research and Analysis Laboratory (SRAL), will conduct material analysis in Winterthur’s SRAL, and with colleagues at the University of Delaware. Jim Schneck and Laszlo Bodo, imaging specialists, will help train new staff in documentary photography and create the public audience video. Lois Stoehr and Megan Millman are public program staff who will collaborate with conservators to create new tour and program content, train, and execute new programs.

All Winterthur staff will work under the supervision of objects conservator Bruno Pouliot. Salaries for grant staff are consistent with Winterthur salary ranges for those positions. Because of the undergraduate and graduate conservation programs at the University of Delaware, there is a pool of qualified applicants available. See *resumes.pdf* for position descriptions.

Costs for equipment and supplies for silver cleaning and coating have been estimated using Winterthur’s established vendors chosen for reliability as well as price at the time of purchase. Equipment costs include a downdraft table to help capture the dry lacquer as it is removed and a new fume extraction arm to further reduce solvent vapors adjacent to the ductless fume spray booth used during Phase I. The downdraft table is necessary because analysis of the coatings during Phase I revealed the possible presence of cyanide on some pieces. The new equipment will allow the capture of all removed coatings, which can then be disposed of safely as hazardous wastes. Purchase of a UV lamp

with a specific wave length will allow project staff to use a new technique developed by peers at the Colonial Williamsburg Foundation to verify coating continuity. The project also requires a new camera for documentation. Winterthur will supply the lights, diffusion dome, computer and software for processing the images. TOF-SIMS analysis will be undertaken at the University of Delaware at a discounted rate of \$80 per hour.

Impact and Project Results

The plan submitted has multiple immediate and long-range benefits. It will:

- Enable conservators to maintain effective preventative care for silver objects including those lacquered nearly thirty years ago and those that have never been lacquered. A successful project will meet the goal of coating or recoating the most at risk portion of Winterthur's silver collection.
- Continue to provide access for visitors and students by protecting silver objects displayed openly in museum room settings and used in teaching environments. A successful project will maintain safe access to the collection for visitors, collectors and scholars.
- Establish the parameters necessary to deal with similar issues effecting coated copper alloy metals in the collection and use this information to plan for comparable conservation care, research and dissemination for this important collection.
- Bring quantifiable results from nearly 30 years of lacquer coating practices to the international conservation community by publishing the project's findings. A successful project will produce a published assessment of the coating program and associated scientific analysis, offering recommendations and cautions for the lacquer coating of silver. A statement of support from Museum of Fine Arts, Houston, decorative arts conservator Steven Pine attests to the valuable contribution of this research and analysis to the larger field of objects conservation. *See supportingdoc8.pdf*
- Expose students in both graduate programs (54 in residence during the course of the project) to the issues involved in exhibiting and preserving metals and to new research so they disseminate this information to new venues where they intern and work.
- Further scholarship by gathering information and preparing objects for a proposed publication documenting Winterthur's historic jewelry and for a proposed (but unscheduled) exhibition and conference on historic lighting devises.
- Share techniques and best practices of metallic surface care to the conservation community and the general public caring for personal objects.

¹ Don B. Heller. "The Coating of Metal Objects at Winterthur." *AIC Preprints*. Washington, DC: AIC, 1983. pp 57-64.

² Dandridge, P. 2005. The exhibition of unlacquered silver at the Metropolitan Museum of Art. *JAIC* 44(3): 175-183.

³ Metcalf, S. January 1997. Weighing up silver objects: evaluating past and future conservation methods. *V&A Conservation Journal*. 1-2.

⁴ Pouliot, Bruno, Catherine Matsen, Jennifer Mass, Willaim Donnelly, Kaitlin Andrews, and Margaret Bearden. 2013. "Three Decades Later: A Status Report on the Silver Lacquering Program at Winterthur. *AIC Objects Specialty Group Postprints*. (20)33-48.

⁵ Selwitz, C. 1988. Cellulose nitrate in conservation. Marina del Rey: Getty Conservation Institute.

⁶ Reedy, C.L., et al. 1999. Evaluation of three protective coatings for indoor silver artifacts. *AIC Objects Specialty Group Postprints* 6: 41-69.

⁷ Ankersmit, H.A., and R. van Langh 2002. The removal of lacquers from silver by steam. *Contributions to Conservation. Research in Conservation at the Netherlands Institute for Cultural Heritage*. Eds. J.A Mosk and N.H. Tennant. London, UK: Archetype Publications. 1-9.

IMLS GRANT: Conservation of Silver and Copper-Alloy Objects, Phase II
SCHEDULE OF COMPLETION

Activity	Year 2 (10/1/2017-9/30/2018)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Hire and train conservation techs												
Hire Asst. Conservator												
Establish Art Handling Schedule												
Order supplies / EQ												
Art Handlers: Transporting Objects												
Silver Objects												
Assess, Clean & Recoat												
8th floor (study)												
7th floor												
6th floor												
5th floor												
4th floor												
3rd floor												
Galleries												
Sampling, Analysis, Compiling Data												
Production of Publications & Presentations												
Video production and upload												
Develop & Implement Public Programming												