

Crawford Conservation Studio

Conservation of Cultural and Fine Art objects

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Date: 11/02/11

Conservation Treatment Proposal

Object:	Liberty Bell Replica	Owner/Curator:	State of Colorado
Artist/Provenience:		Agent:	Sue Johnson /Capitol Complex, the Capitol Building Advisory Committee and the Capital Development Committee
Age:	c. 1950	Conservator:	Matthew F. Crawford
Exam Date:	11/02/11		

Description: The full sized liberty bell replica is situated in Lincoln Park on the west side of the Colorado State Capital building lawn. The replica includes the wood yoke mounted to the bell cannons with threaded iron mounting rods and nuts similar to the mounting hardware seen on the original bell. The bronze bell has been placed on a double A-frame steel support structure, fabricated from welded I-beam struts and rectangular bar stock cross members, so that the lip of the bell rests on the cross members. The bell and its steel mounting structure are centered in a concrete pad consisting of concentric rings radiating dividers. Commemorative plaques related to the bell are mounted into the concrete surround.

Condition:**The Bell:**

Metal components of the bell exhibit typical surface deterioration consistent with age and weathering including tarnishing and light compact corrosion of the bronze and iron rust stains from runoff corrosion from the steel components of the mounting rods. The original patina of the bronze is altered overall but in a manner consistent with natural weathering and patination of the metal.

The Steel mounting rods and collars at the end of the yoke exhibit compact surface corrosion consistent with age and weathering. There was no evidence of loose or active corrosion.

The wood yoke exhibits significant weathering and deterioration including cracking and checking of the wood structure. This structural deterioration of the wood is most notable in the cross grain at the ends of the yoke block and across the top of the block. Where water and ice tends to pool and accumulate. At the time of examination soft spots or extensive or active rot was detected in the wood.

The Structural Mount:

The Structural support is currently unstable due to a break in a weld between the leg and cross member at the SW corner of the mount structure. Other than this the mount structure exhibits irregular, moderate to heavy, compact surface corrosion but no loose or active corrosion was observed. The irregular nature of the surface corrosion is in part due to incomplete surface coating of the steel. The steel frame work appears to have been painted at some time in the past, now evident only in the central plates of the I-beam supports.

The Concrete Pad:

The pad appears structurally stable with no significant structural cracks, lifting or sinking of the concrete. There are numerous surface losses where thin sections of the surface have spalled off. This damage occurs along the seams and edges between the sections of concrete and is generally the result of freeze and thaw cycles.

Treatment Recommendations:

The Bell:

Concerning the metal components of the bell, there is no evidence of active corrosion or structural deterioration. The surface corrosion and staining present are typical of age and weathering and appear compact and stable and should act as a passivating layer, which hinders further corrosion of the bronze. Beyond surfaces cleaning, treatment of the bell would be a curatorial decision regarding the aesthetics of the bell. The uneven weathering and patination of the bronze can not effectively be addressed by localized treatment. Instead a complete surface polishing and re-patination of the bronze would be necessary. This would ultimately destroy the natural weathering patina that has developed over time, remove existing material and set up the newly finished bronze to begin to weather and deteriorate again.

The Wooden Yoke:

While the wood exhibits more significant structural damage in the form of splitting along the top and checking at the sides, filling losses such as these in wood is generally not effective and can lead to further structural deterioration of the wood. My recommendation would be to treat the original wood structure with a wood preservative/sealant and fabricate a copper sheet metal cap to cover the top surface of the yoke. This would prevent water and ice and wind blown debris from building up in the existing crevices without create a binding or restrictive inclusion that would propagate further cracking. The metal cap would have a narrow (1/4" to 1/2") turned edge over the corner to keep water flowing down the face and not leaking back onto the top surface of the yoke. This I believe will protect the wood while creating a minimal visual impact on the bell.

The Steel Mounting Structure Including the steel mounting rods and nuts):

The broken weld should be repaired and the steel should be re-surfaced to remove partial surface coating and to restore a uniform appearance to the metal. After resurfacing all steel surfaces should be treated with a passivating solution the inhibit further rusting.

The Concrete Pad:

The spalling on the concrete pad present a difficult problem. Repair is possible but not likely to be visually acceptable because achieve an suitable color and texture match to the original concrete would be nearly impossible. Two alternative would be to accept the existing condition and seal the concrete to reduce the likelihood of continued spalling. The second option would be to remove the concrete pad and reinstall with new concrete.

Establish a Regular Maintenance Program:

Once treated the Liberty Bell and the component parts should receive regular upkeep and maintenance. This would include annual or (ideally) semi-annual inspection, cleaning and waxing of all metal surfaces and biennial preservative/sealant re-treatment of the wooden yoke

Estimated Treatment Cost (option 1):

This option includes minimally intrusive treatment and strives to preserve the current weathered and aged appearance of the Liberty Bell. It is expected that all work will be done on-site.	Time (hrs)	\$0.00
Surface clean the Bronze bell and the steel mounting rods and nuts	16	\$1,440.00
Clean, apply preservative and fabricate/install metal cap to the wooden yoke	8	\$720.00
Weld broken frame component		\$500.00
Surface clean and treat steel structural mount	12	\$1,080.00
Apply initial wax coating to all metal surfaces	6	\$540.00
Apply sealant to existing concrete pad	6	\$540.00
Materials and Supplies		\$350.00
Travel and expenses		\$250.00
Treatment Time:	42	
Total	Total	\$5,420.00

(Treatment costs are calculated at a rate of \$90.00/hr.)

This Estimate is based on the preliminary examination of the object and does not include treatment for unforeseen conditions that may be revealed during the course of the treatment. Significant changes in the treatment plan will be documented and submitted to the owner for approval as an addendum to this document, prior to completion of the treatment.

Estimated Treatment Cost (option 2):

This option is a more intrusive treatment which will include complete resurfacing and patination of the bronze bell. This will also require transporting the bell to a local foundry for the patination process.	Time (hrs)	
		\$0.00
Dismantle the component parts of the bell for resurfacing and patination	6	\$540.00
Fabrication of a new wood yoke from like material	8	\$720.00
Resurface and patinate the bronze bell	24	\$2,160.00
Surface clean and treat steel structural mount	12	\$1,080.00
Weld broken frame component		\$500.00
Reinstall the bell	6	\$540.00
Apply initial wax coating to all metal surfaces	6	\$540.00
Apply sealant to existing concrete pad	6	\$540.00
Rigging and transporting the bell		\$3,200.00
Materials and Supplies		\$1,200.00
Travel and expenses		\$350.00
	Treatment Time:	68
Total	Total	\$11,370.00
		0

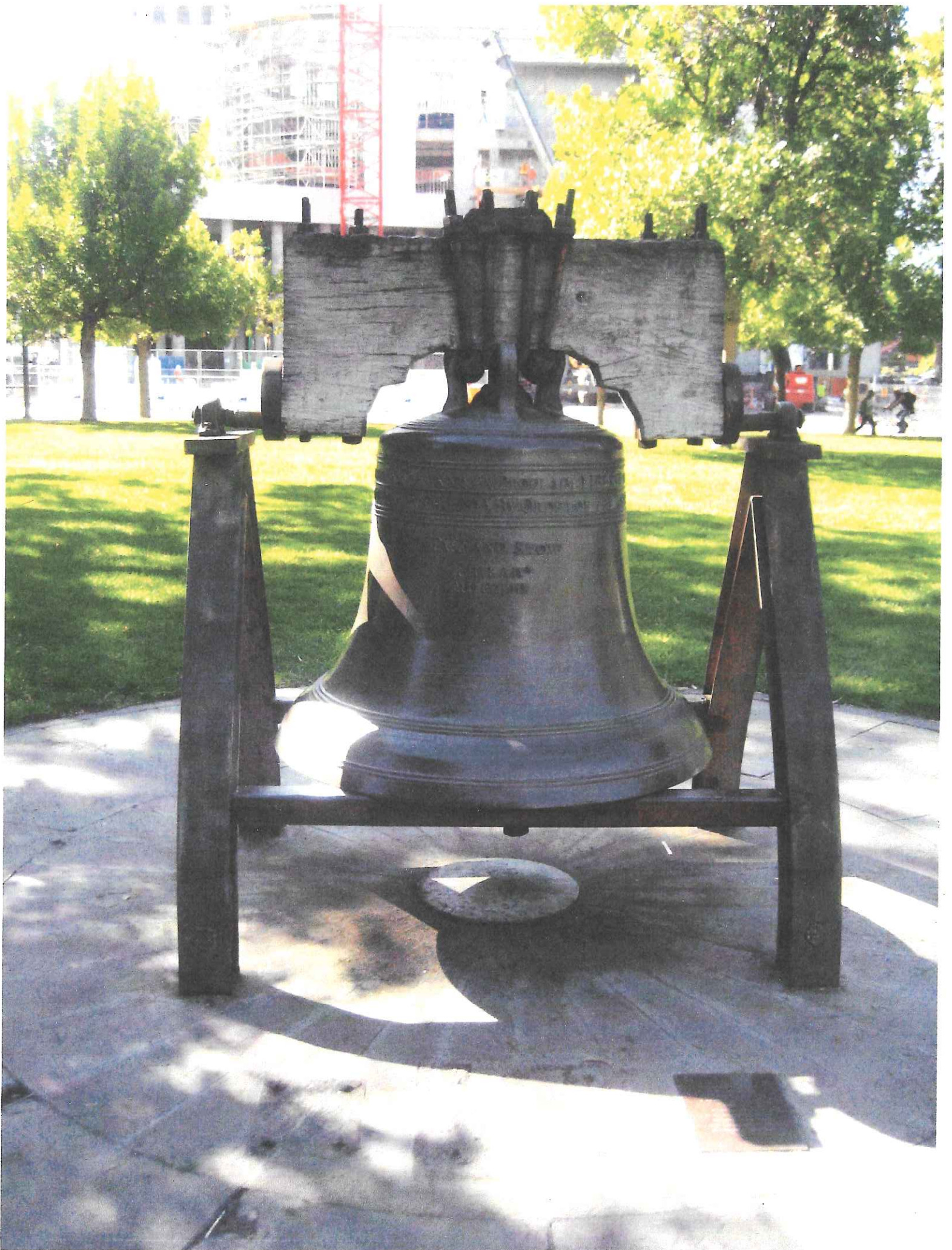
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Estimated Treatment Cost (Concrete pad):

This option address repair of the concrete pad and is separate form any treatment of the bell itself	Time (hrs)	
		\$0.00
Remove and dispose of existing concrete		\$2,500.00
Reform, pour and finish new pad to match the original design and dimensions.		\$7,000.00
Total	Total	\$9,500.00

The concrete work would be done by an independent contractor. The estimate above is based on verbal description of the project and the amounts should be considered very rough estimates and subject to change upon direct inspection of the site and scope of work.



Matthew F. Crawford
Objects Conservator
Fine Arts and Material Culture

Work Experience

Conservator in Private Practice

January 2003 to Present

Crawford Conservation Studio

Fort Collins, Colorado

Proprietor. Offering a variety of conservation services to Museums, Universities and private collectors. Services include; object treatment, collection and environmental assessments, surveys and condition reporting, case design/fabrication, storage and exhibit mount design, and fabrication and consulting services for exhibition transport. Recent major projects include developing environmental guidelines and storage mount design for the Museum of Northern Arizona's purpose built, LEED certified, collection storage facility (2008-09). IMLS condition survey of Latin American Textiles for the Denver Museum of Nature and Science (2009-10) and a Conservation Assessment of the Hop Nation's Beenhouwer Collection of Contemporary Native American Art housed at the Museum of Northern Arizona (2010)

Museum Conservator

February 2000 to January, 2003

Denver Museum of Nature and Science

Denver, Colorado

Position Supervisor, Jude Southward, Conservation Department Manager. The duties of the DMNS Museum Conservator included the ongoing assurance of collections preservation through the establishment and implementation of conservation standards and practices in policies for the exhibition, storage and loan of collections. Duties included monitoring of environmental conditions within the Museum's exhibits and storage areas, supporting a preventive conservation approach collections care by implementing storage and exhibit upgrades, and providing conservation support to the collections through condition reporting and stabilization treatments.

Objects Conservator

July 1997 to January 2000

Rocky Mountain Conservation Center

University of Denver, Denver, Colorado

The duties of the objects conservator include supervision of the objects lab, which develops and implements conservation treatments on a wide variety of three-dimensional objects.

Assistant Conservator Conservation Department

September 1995 to June 1997

Arizona State Museum

University of Arizona, Tucson, Arizona

Archaeological Perishable Material Project

Project Supervisor: Nancy Odegaard, Conservator. Funded by the National Science Foundation, the project involved a bilateral approach between conservation and curation of collections to upgrade the systematic Archaeological Perishable Materials Collection. The project's goal was to simultaneously improve housing, storage conditions, and access to the collection while upgrading the collection's documentation.

Education

Winterthur/University of Delaware

Winterthur, Delaware

M.S. Awarded August 1995: Program in Art Conservation: Majoring in Objects Conservation, specializing in Archaeological and Ethnographic materials.

Colorado State University

Fort Collins, CO

B.F.A. Awarded May 1985: Studio concentration in painting with an emphasis on art history and special interest in handmade paper.

Archaeological Experience

Summer 1993: Assistant Field Conservator on a nine week summer work project at the Kavousi Archaeological Project based in Pachia Ammos, Crete, Greece. Conservation work on the project involved cleaning and restoring numerous ceramic and iron artifacts, and preparing them for long term storage. Site Conservator, Noel Sifer.

Summer 1995: Assistant Field Conservator. Excavation and field conservation, at the Homol 'Ovi Archaeological Project, Winslow, Arizona. Project Director, Dr. Charles Adams, Arizona State Museum.

Spring 1996: Field Conservator for the Chianciano Terme Archeological Project, 1996 season, an Etruscan site, in Chianciano Terme, Italy. Project Director, Dr. David Soren, Classics Department, University of Arizona. Duties included field lab set up, student training and on-site stabilization of finds.

Summer 1998: Field Conservator for the Gordion Archaeological Project, 1998 field season Yassihöyük, Ankara, Turkey. Work included treatment of objects as well as assessment and monitoring of environmental conditions for collections storage and exhibition areas. Project Director, Dr. Kenneth Sams, Department of Classics, University of North Carolina, Chapel Hill

Teaching

Adjunct Lecturer, University of Denver: Anth. 3741, Spring 1998, 2000, 2002 and 2003. This course addresses the basic concepts of art conservation relating to the care of systematic collections, including approaches to preventive conservation and the monitoring and maintenance of museum environments. The course examines the physical characteristics of a range of materials in order to understand their structure, manufacture, degradation processes and preservation needs.

Professional Associations and Activities

American Institute for Conservation of Historic and Artistic Works (Member 1991)

-Professional Associate of AIC since 1998

Western Association of Art Conservators (Member 1995)

The Washington Conservation Guild (Member 1990)

IMLS Conservation Grant field reviewer 2002-2004

Seminars and Workshops

Radiography Workshop sponsored by the Washington Conservation Guild. Instructor: Dan Kushell, Professor of Paintings Conservation, Buffalo State College Art Conservation Program, Buffalo NY. March 22-24, 1992.

Cleaning Systems Workshop sponsored by the University of Delaware. Instructor: Richard Wolbers, Associate Professor of Art Conservation, University of Delaware Art Conservation Program. February 12-17, 1994.

Presentations

"The Care and Conservation Textiles" A presentation to the Rocky Mountain Weavers Guild on the physical and chemical differences of various fiber types and the appropriate methods for handling, cleaning, storing and preserving each. February 22, 2001.

"Preserving Cultures: The Best Way to Care for and Exhibit Native-Made Objects." Program session presenting cultural and ethical issues involved in the treatment of Native American material culture, Mountain-Plain Museum Association Annual Meeting, Missoula Montana, 1997

"Laundry Bluing as a Colorant in Ethnographic Objects," Nancy Odegaard and Matthew Crawford, Paper presented at the I.C.O.M. Triennial Meeting of the Conservation Specialty Group, Edinburgh, Scotland, 1996.

A two day presentation at the Pre-session on Storage and Housing for the 1996 Annual Meeting of the AIC in Norfolk Virginia.

July 1995: Presented a lecture on Archaeological Conservation to the site staff and visiting Earthwatch volunteers at the Homol 'Ovi Archaeological Project.

April 1995: Assisted with preparing and presenting a series of lectures on Art Conservation for Materials Science/Anthropology course MSE-257, University of Arizona.

Publications

Odegaard, Nancy and Matthew Crawford, "Laundry Bluing as a Colorant in Ethnographic Objects", ICOM-CC Triennial Meeting, Scotland, 1996, James River Press.

Odegaard, Nancy, Matthew Crawford and Werner Zimmt, "New Uses for Uses of Polytetrafluoroethylene Film on Storage Supports." JAIC 36 (1997:249-51).

Odegaard, Nancy and Matthew Crawford, "Technical Analysis of Painted Basketry and Associated Material from AZ U:3:297 (Punkin Center)" Field Report on Punkin Center Excavations, Desert Archaeology Inc. Tucson, AZ