

April 12, 2011



LACMA, DCA, and Watts Towers

First Quarterly Report (January - March 2011)

Prepared for the DCA, City of Los Angeles, by Frank Preusser, Mark Gilberg, and Brooke Davis Anderson

Summary

During the first quarter we concentrated on the organization and review of existing documentation and information (hardcopy and electronic), hiring an on-site conservator, developing an inventory for ornaments that had fallen or been removed from the towers, developing and testing a method for securing ornaments in imminent danger of falling, and consulting with outside experts on approaches to long-term care.

Accomplishments:

Staffing

LACMA staff who are working on the conservation component of the project include:

Dr. Mark Gilberg, Director of the Conservation Center
Dr. Frank D. Preusser, Senior Conservation Scientist
Yosi Pozeilov, Senior Conservation Photographer
Dr. Terry Schaeffer, Chemical Hygiene Officer

Drs. Charlotte Eng (Associate Research Scientist, LACMA) and Chetan Suryawanshi (Post-Doctoral Research Fellow, LACMA) provide analytical support, and Ms. Christel Quinn (Program Manager, LACMA) assists in the re-organization of the office files. LACMA's IS department provides necessary computer support.

The magnitude of the project also required the following additional staff (more staff may be added as the project progresses):

- Jennifer Porter was hired on a temporary contract as site conservator (January 18 to March 16, 2011).
- Colleen Boye was hired under a three-month contract to copy, inventory, and organize the over 600 computer disks stored in the conservation office.

- Sylvia Dorsch was hired as the site conservator, starting April 1st

Consultants

- Mel Greene (Melvyn Greene & Associates, Inc.) is the structural engineer currently under contract with the city. He met with Frank Preusser at the Towers on March 2. The discussion included aspects of the construction of the Towers, previous structural interventions, crack repair philosophy and methods, and a possible monitoring program for the Towers. Mel remains available to the project on an as needed basis.
- Dr. Norman Weiss (Columbia University, New York) is an expert in the deterioration, repair, and preservation of concrete and other cement based architectural elements. He was contracted to review the Ehrenkrantz Report, the ARG report, and the Conservation Handbook. He was invited for a site visit and discussions with Mark Gilberg and Frank Preusser on March 14 and 15. His report is in preparation.

Office

We purchased a new computer. AT&T installed a new phone line (323-357-8480) and provided Internet connection. A new phone was purchased and installed. A cellphone was purchased for the site conservator (323-944-7276).

Christel Quinn created an inventory of the office files. After review of the files in the next quarter they will be purged of unnecessary duplicates and reorganized.

Chemical Safety

All staff working on site has received safety training by LACMA's Conservation Center Chemical Hygiene Officer, Terry Schaeffer.

Hazardous chemicals (flammable and toxic) have been found at various locations in the office trailer and the storage container and are being prepared for proper disposal. An inventory of these materials was created. It was decided to dispose of all chemicals in corroding or leaking containers, and those that were beyond their shelf life. Kevin Lucey of Thomas Gray & Associates, Inc. was subcontracted as hazardous waste disposal broker. He reboxed the waste chemicals and made them ready to be transported off site for disposal. The Region 9 office of the EPA was contacted to obtain an EPA (Federal) RCRA site Identification Number. The site had an inactivated number which was reactivated and the chemicals will be removed from the site as soon as possible.

A flammable solvent storage cabinet was purchased and located in the former bathroom of the office trailer. Flammable chemicals we retained are now housed in this cabinet; flammables acquired in the future will also be stored here.

Material Safety Data Sheets (MSDS) for all retained chemicals were collected from various office files, obtained from the LACMA files or the suppliers and consolidated

into a three ring binder, which is now in the trailer/office. Duplicates of the binder are located by the flammables cabinet and in the storage container. A complete inventory of the currently held chemicals is available in the office.

An inventory was also made of all Personal Protective Equipment (PPE) found on the site. Some additional PPE and other items that will be required for handling chemicals safely during conservation work have been purchased.

Review and Reorganization of Electronic Files

Computer disks were collected from a variety of locations, including different filing cabinets in the office trailer, storage boxes, and the on-site storage container. There was no apparent order and, as we found out, many of the disks had incomplete or misleading labels. LACMA hired Ms. Colleen Boye to work from February 15 to May 15, 2011, on contract, to copy and organize the information. At the end of this process the original disks will be properly packed and put in storage.

To date we have retrieved and numbered 610 disks in the following formats:

5.25 “

3.5 “

Zip

CD

Laptop computer

The 3.5” disks, the laptop computer, and the CDs have been copied and inventoried. Together they contain 20.5 Gb of information in 24,370 files. We estimate that ~9,000 of the files contain relevant information. We are currently copying and creating inventories of the Zip disks and the 5.25” floppy disks. The next step will be to create a duplicate of all this material and purge it from irrelevant information and organize the remaining information (some files are split between 10 or more floppy disks and have to be consolidated together). The original, unaltered copy of the material and the inventory file will be archived for future reference.

On March 16 we received from Zuleyma Aguirre a back-up copy of the MS Access database that was on the desktop computer in the conservation office. Copies of the remaining files on her computer will be submitted to us shortly. This information will be added to the above-described database.

Once the re-organization is completed we can begin to analyze the information.

Review of Existing Conservation Management Plan(s) and Past Condition and Treatment Reports

We have reviewed DCA’s existing conservation management plans with particular emphasis on the Ehrenkrantz Group’s *Preservation Plan for Simon Rodia’s Towers in Watts* and *Maintenance and Restoration Plan*, Architectural Resources Group’s *Evaluation and Conservation of Fissures Report* and *Documentation Synthesis and Materials Research Report* and the latest version of Goldstone’s *Conservation Handbook*.

We have also identified and collected various reports and publications describing different treatment campaigns undergone by the Towers. The focus of the review is to determine the success/failure of previous interventions and to establish the rate of deterioration of the Towers both in terms of crack development and loss of decorative elements (ornaments). It is also currently not known what the actual *rate of deterioration* is, both in terms of crack development and loss of decorative elements (ornaments). This work will continue.

Review of the Rand Photos

Marvin Rand's original photographs of Watts Towers taken in the early 1980s which have served as the standard point of reference for the physical condition of the individual structures in all subsequent studies of the Towers have been temporarily moved from the conservation trailer to LACMA's Conservation Center to put them back in order and assess their condition. They will be scanned in high resolution (previous scans were in relatively low resolution). We will then re-photograph the Towers duplicating many, if not all, of the Rand photographs. This establishes a new baseline for the condition of the Towers in 2011 and allows us to determine the changes (losses, repairs) that have taken place since the Rand photos were taken.

Planet 9 Studios Web-Based Database

In 2004 ARG proposed using a three-dimensional web-based computer model of the Watts Towers site, to which documentation is linked via associated locations, to gather all relevant historical treatment information into a single accessible format. ARG contracted with Planet 9 Studios to develop a basic model, with the understanding that over time, additional details and documentation could be added. The intention was for the 3D interface to be a representational facsimile of the architectural features of the monument, thereby allowing intuitive navigation of the information residing in the database. ARG's goal was to provide a substantial foundation upon which current and future individuals working at the site could easily update the system. A copy of the three-dimensional, web based computer model of the Towers originally developed by Planet 9 Studios in 2006, however, could not be located. After an initial inquiry about its status, Planet 9 Studios was contracted to set up and configure an open source, PostGIS database of their Amazon EC2 server and to transfer the 2009 Watts Towers database, web client and plug-in to the new server. The transfer was completed on March 26 and the database is currently under review.

Inventory of Detached Ornaments

Ornaments and other material occasionally detach and fall from the fabric of the Watts Towers, either due to adhesive failure, physical stresses (movements and vibration), thermal and hygric stresses. Some of them have been removed during past interventions.

In the next quarters, fragments will be documented, organized and stored by LACMA for the following reasons:

- It may be possible to reattach some of them at some point in the future in their original locations;
- They may be useful in treatment testing;
- If well documented, their loss can be used in establishing rates, types and locations of deterioration within the monument;
- They may be useful in other unforeseen research applications in the future;
- As original material from the monument they should not be disposed of.

Over the years, fragments have been collected with varying degrees of documentation: while some have been stored with full information on the date and location of their collection, no information is available for others. These fragments were found stored in a very haphazard manner throughout the conservation office, storage container and Arts Center. Most of the ornaments are fairly large (>2-3 inches) and characteristic enough that their original location could possibly be found for reattachment, if documentation for their collection location becomes available.

A reorganization of these fragments was initiated when LACMA began work at the Towers in January 2011. Also at this time, regular surveys of the monument were begun (daily and more thoroughly weekly), and newly fallen fragments documented, collected, inventoried and stored. Work during the period from January-March 2011 has had the following goals:

- Establish procedures for documentation, inventorying and storage of fragments collected prior to LACMA's involvement;
- Establish procedures for documentation, collection, inventorying and storage of fragments collected by LACMA;
- Set up a searchable database which will contain all fragments (pre- and post-LACMA);
- Establish an initial rate of ornament and material loss and characterize it in function of variables such as location, fragment material type, weather phenomena etc.

To date 479 fragments have been entered into the database, 349 have been photographed and the photos entered into the database, and 290 have been labeled and re-housed.

We have yet to receive the ornaments collected by the staff of the Watts Towers Art Center and their associated information.

Temporary Securing of Loose Ornaments

Detachment and loss of ornaments is a regular event at the Towers. During regular inspections we removed three ornaments which were in immediate danger of falling, documented their location, entered them in the database and put them in storage.

Large, flat, fragmented glass ornaments at the Watts Towers (figures 1 and 2) are losing adhesion to the underlying concrete. An organic adhesive identified as cellulose nitrate has often been applied beneath the plates, either by Rodia himself or in a previous repair.

In addition to the loss of adhesion, the plates are broken into numerous pieces, presumably due to vandalism (e.g. shooting with bb guns) and thermal stresses. Additionally, lichens have been observed growing in spaces between the plates and concrete support, which can speed their detachment. Many fragments of the plates have already been lost, but it has been possible to save a few detached fragments by removing them before they fell off. It is important to prevent these pieces from falling to the ground, since they could shatter irreparably on impact.

It was decided to secure these ornaments by facing them with a transparent fabric until a permanent solution is recommended. Facing consists of the application of a protective fabric which covers the surface of the unstable glass plates, holding them in place, as well as overlapping onto more stable adjacent ornaments and concrete, which serve as anchor points for the fabric. The fabric is secured to the surfaces using an adhesive which is brushed over the fabric or applied to localized points as a gel.



Figure 1: Detail of fractured flat glass plates on the interior of the North Wall.

Laboratory experiments were carried out to determine the best fabric/adhesive combination.

Criteria for the selection of the facing fabric:

- Long fibers to provide strength and flexibility;
- Reasonably UV stable;
- Water resistant;

- Compatible with the chosen adhesive system;
- Transparent or semi-transparent after application of adhesive;
- Flexible enough to conform to shapes of ornaments and rough surface of concrete.

Criteria for the selection of an adhesive system:

- Reasonably UV stable;
- Water insoluble after setting;
- Reversible - easily dissolved after setting and exposure to UV and water for a few years;
- Will ideally have a refractive index similar to that of the glass plates and facing fabric so that it will have a minimal effect on the appearance of the monument;
- The adhesive should not be too strong for the substrate.



Figure 2: Interior of the North Wall, before facing.



Figure 3: After facing.

A 10% solution of Paraloid B72 in Toluene was chosen as the adhesive because it is relatively UV and water stable, at least within time frame projected for this treatment, reversible and not too strong. As facing fabric we chose Stabiltex white¹: low density weave, extremely fine polyester fabric normally used in textiles conservation.

Figures 2 and 3 show one of the treated areas before and after facing.

Fundraising

The LACMA Development office was awarded a grant of \$500,000 from Irvine Foundation to conduct a scientific study of conservation treatment needs, involve the community and other stakeholders through outreach programs, sponsor the Watts Towers Common Ground Conference, and identify other partners for long-term support.

Development also has requested funds for similar tasks from a corporation. Notification pending.

Staff continues to work on raising awareness about Watts Towers to LACMA patrons.

Goals for 2nd, 3rd, & 4th Quarter

- Complete inventory of electronic files, purge and re-organize.
- Purge and re-organize office files.
- Continue inventory and re-housing of collected detached ornaments.
- Continue to secure loose, endangered ornaments by facing or other appropriate means.
- Begin thorough condition survey of the lower parts of the monument (procedures for this survey to be developed and tested during the second quarter of the project).
- Begin crack monitoring with Telltales and plaster bridges.
- Contact experts in monitoring of structures.
- Contact experts in corrosion monitoring.
- Identify and start testing of elastomeric crack fillers, adhesives, and water repellents.
- Continue evaluation of access database and experiment with different database software (e.g. Filemaker Pro).
- Continue review of previous treatment reports.
- Evaluate Planet 9 database, once it is available online.
- Hire staff for site maintenance.
- Hire staff to assist in identifying loose ornaments.
- Identify volunteers from USC Historic Preservation to identify loose ornaments, inventory detached ornaments, temporarily secure loose ornaments, and/or re-do original Rand photography.

¹ Stabiltex white is currently still available from Talas (#TCS024000, http://apps.webcreate.com/ecom/catalog/product_specific.cfm?ClientID=15&ProductID=17620).

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