

July 8, 2011



**LACMA, DCA, and Watts Towers**

**Second Quarterly Report (April-June 2011)**

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

**Summary**

During the second quarter we continued the organization and review of existing documentation and information (hardcopy and electronic), hired one part-time worker for on-site maintenance, completed the facing of the plate glass ornaments, installed telltale and plaster bridge crack monitors, and evaluated miniaturized accelerometers for vibration monitoring. We developed job descriptions for the positions of Assistant Conservator and Research Assistant and have advertised the positions. A local contractor was hired to re-wire the storage container and to rebuild the wooden platform. A thermal imaging camera and a weather station were purchased for the monitoring program. The evaluation of the Access Treatment Database and the Planet 9 web-based database continued and good progress was made in the rephotography of the monuments.

**Introduction**

Besides routine maintenance of the site and monument, the main task for the first year is to review and assess the City's existing conservation and preservation plans for the Watts Towers, which includes proposing changes consistent with available funding and developing a comprehensive conservation management plan. To accomplish this it is necessary to thoroughly evaluate the performance of past interventions. 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). In the second quarter we continued the work commenced in the first quarter and expanded on it with the main goal to better understand the deterioration mechanism of the monument and the reasons for the successes and failures of past interventions.

**Accomplishments**

**Staffing**

- Ms. Sylvia Schweri-Dorsch started on April 1 as the site conservator
- Ms. Liz Werden was contracted to assist Yosi Pozeilov in the organization of the Rand photographs and the rephotography of the Towers.

- Mr. Charles Dickson was hired on a part-time basis for site maintenance (weed control, general site cleanup and other tasks, as assigned).
- Ms. Colleen Boye's contract was extended until the end of 2011.
- Discussions were held with the USC Graduate Programs in Historic Preservation about the possibility of employing students in the project. The first student has been interviewed.

### Consultants

- Discussions with Mr. Mel Greene (Melvyn Greene & Associates, Inc.) on the monitoring program for the Towers continued.
- Dr. Norman Weiss (Columbia University, New York) submitted his report. After internal review the report was returned to him with request for some clarification and expansion. We are waiting for a response from him.

### Office

The inventory and re-organization of the office files is almost complete.

### Chemical Safety

Ms. Sylvia Schweri-Dorsch was registered for an OSHA workshop on workplace safety, which will take place in July.

The hazardous chemicals (flammable and toxic) have been removed by Kevin Lucey of Thomas Gray & Associates, Inc. for proper disposal.

### General Safety

The electric wiring in the storage container is unsafe and not to code. CDM Construction has been asked to submit a proposal for re-wiring the container.



Figure 1: deteriorated wood at platform ramp

The wood of the platform in the location of Rodia's house is heavily deteriorated and the platform is unsafe (Figure 1). The current access to the platform is also not ADA compliant. For safety reasons the platform was cordoned off with yellow caution tape by LACMA staff. The caution tape was removed the following day by Watts Towers Art Center staff. At the request of the site curator, it was re-installed on June 22. CDM Construction has submitted three design proposals for the repair of the platform and ADA compliant access. These proposals are currently under review by the City.

A safety inspection of ladders in the storage container was undertaken. At least two ladders are too rickety for use, and will be replaced.

### Site Maintenance

Mr. Charles Dickson, a local resident and accomplished artist, was hired on a part-time basis to assist in site maintenance and cleaning. He is scheduled to carry out weed removal and general site cleanup twice a week (Monday and Friday). In addition he has been assigned other tasks (to be reported about in the future).



Figure 2: North side after weed removal

### Review of Previous Condition and Treatment Reports

This is an ongoing process. Its goal is to determine the success/failure of previous interventions and to determine the rate of deterioration. Different aspects of this activity will be discussed elsewhere in this report.

### Archival Research

LACMA staff visited the City Archives and UCLA Archives to research the Watts Towers related materials. Some files of significance were identified in both archives and we are currently exploring the most economic way of obtaining copies of such materials.

Ms. Colleen Boye is currently re-organizing, re-housing, and creating an inventory of the treatment records from the state.

### The Rand Photos

The 4x5 Rand photos have been re-organized and put in archival sleeves and binders. All unique 4x5 transparencies have been scanned in high resolution by an outside contractor.

The three tall towers have been photographed by Rand in 35mm slides. Ms. Liz Werden's contract was extended to organize the slides, separating out duplicates. The slides will then also be scanned.

### Rephotography of the Monument

Rephotography of the monument, approximately duplicating Rand's photographs serves two purposes:

- a) Document the condition of the monument today.
- b) Determine changes that have occurred since the late 1980's (repairs, loss of ornaments, etc.).

As of early June, 167 photographs have been taken, duplicating 334 Rand 4x5 photographs.<sup>1,2</sup>

### MS Access Treatment Database

A number of LACMA staff have reviewed the current database and we now can draw the following conclusions:

- While time consuming and somewhat cumbersome we can extract some of the information we are interested in.
- Since the database was designed in the early days of personal computing (and never substantially revised since) it contains far too many fields and is also limited in other aspects.
- Data entry is not consistent, complicating data retrieval.

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<sup>1</sup> There are multiple redundancies in the Rand photographs, which reduces the number of original images.

<sup>2</sup> The current photo campaign addresses all monuments but the three tall towers. The re-photography of the tall towers will be a separate future project.

- Treatments that took more than one day to complete have multiple entries, since new records were created for every work day even if the same area was treated.
- There is no direct link to the related photo documentation.
- The database does not contain any information about interventions prior to the creation of the database (for example the substantial interventions of the state exist only as a paper record).

We came to the conclusion that it would not be practical to continue using this database, at least not the current format. In the coming months we will develop a new prototype database using Filemaker Pro™. The goal will be to have a much simplified database with free text search capability and direct link to associated photo documentation.

### Planet 9 Web-Based Database

The web-based, three dimensional model of the Watts Towers site developed by Planet 9 in 2006 using location specific documentation synthesized from the MS Access database has been organized onto a new server. While there are many advantages to gathering all relevant historical treatment information into a single accessible format in this manner, the cost of entering all treatment records, reports, and photographs may prove prohibitive and the potential benefits may not justify the expenditure given the limitations of the MS Access database mentioned above.

### Inventory of Detached Ornaments

Work on the fragment inventory has been temporarily suspended until we have additional staff or students on site, since we wanted to concentrate on more timely issues during this quarter.

Despite multiple requests to Watts Towers Art Center Staff, we have not yet received the fragments (and the associated documentation) that are in the custody of the Watts Towers Arts Center. The original locations of at least some of these fragments are known and they could at some time in the future be re-attached if we had access to them.

Very few fragments have fallen since the last report. They have been collected, photographed and entered in the database. Figure 3 shows a prototype location map for collected fragments; such maps will allow us to establish patterns of deterioration on site over time.

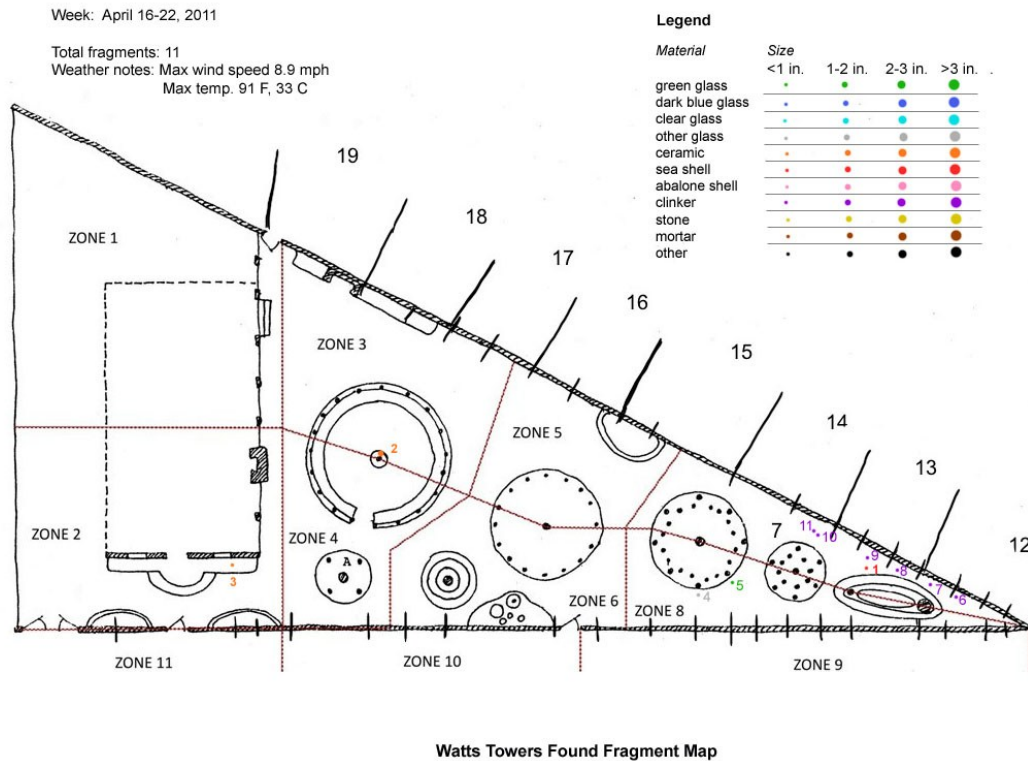


Figure 3: Prototype fragment map

Temporary Securing of Loose Ornaments

We completed the facing of the fragile flat glass decorations on the North Wall (see first quarterly report). A total of approximately 23 square feet of decoration was secured in this manner.

Three fractured ornaments on the Ship have been secured by infusion of a B72 solution into the fractures and behind loose pieces. Since B72 is not suitable as an adhesive in outdoor conditions and has failed at the Towers in the past, this is considered a temporary measure until a more permanent solution is found (See first quarterly report).

Condition Survey

To establish a baseline and a foundation for the planning of future work it was decided to carry out a thorough condition survey of all areas that can be reached from the ground and with ladders<sup>3</sup>. In order to develop a more or less standardized approach and reporting structure we selected the Ship as the first monument to be surveyed. Special attention is given to:

<sup>3</sup> Higher elevations require a scaffolding or boom truck and will therefore be condition surveyed at a future date.

- Cracks (new and old)
- Potentially loose ornaments
- Changes since the Rand photos were taken (repairs, losses)

Since we are interested in establishing a rate of change/losses and a history of interventions in specific locations, we are also looking for historic photographs (pre-Rand) as a reference. Requests to the Watts Towers Art Center staff for access to such material in its archive/collection have, to date, been denied.

### Evaluation of Cracks

Cracks and crack repairs are a major subject of every report issued on the towers. Not long after extensive crack repairs the development of new cracks has been reported. Our own observations strongly suggest that a majority of the “new” cracks are in fact failed crack repairs (Figures 4 to 10). Assuming that the repairs have been properly executed in terms of materials preparation and application, these failures strongly suggest that many cracks in the towers are not static, but are moving.

Moving cracks can be caused by:

- Corrosion of the steel support
- Movements of the structure (vibrations, wind, seismic)
- Thermal stresses



Figure 4: failed mortar fill



Figure 5: cohesive failure in epoxy repair



Figure 6: Loss of mortar cover over failed epoxy repair

Figure 7: Loss of mortar crack fill



Figure 8: failed mortar repair

Figure 9: Cohesive failure in epoxy repair





Figure 10: Cohesive failure of epoxy repair

Cracks can move in one direction, getting ever wider (such as the ones generated by steel corrosion), or they can move cyclically, opening and closing (such as the ones created by movements of the structures or by thermal stresses). To determine the appropriate repair materials and methods, one has to know if any given crack is static or moving, and the degree of movement. We therefore started a crack monitoring program (as had been suggested in a number of reports in the past).

To get started, we installed four Tell-Tale crack monitors (Figures 11 and 12) and 13 plaster bridges (Figures 13 and 14). The locations are marked in Figure 15. The plaster bridges crack when the crack being monitored moves (Figure 14). The Tell-Tales show bidirectional movement of the crack but are not very useful for the monitoring of cracks that open and close. After almost two months, nine of the plaster bridges have cracked and one of the Tell-Tales showed movement. For a more detailed evaluation of the crack movements we will need to install more sophisticated monitoring devices (strain gauges, foil type) and we are currently evaluating the available equipment and the options of doing it ourselves or contracting it out. The locations for future monitoring will partially be determined by the results we obtain from the Tell-Tales and plaster bridges.

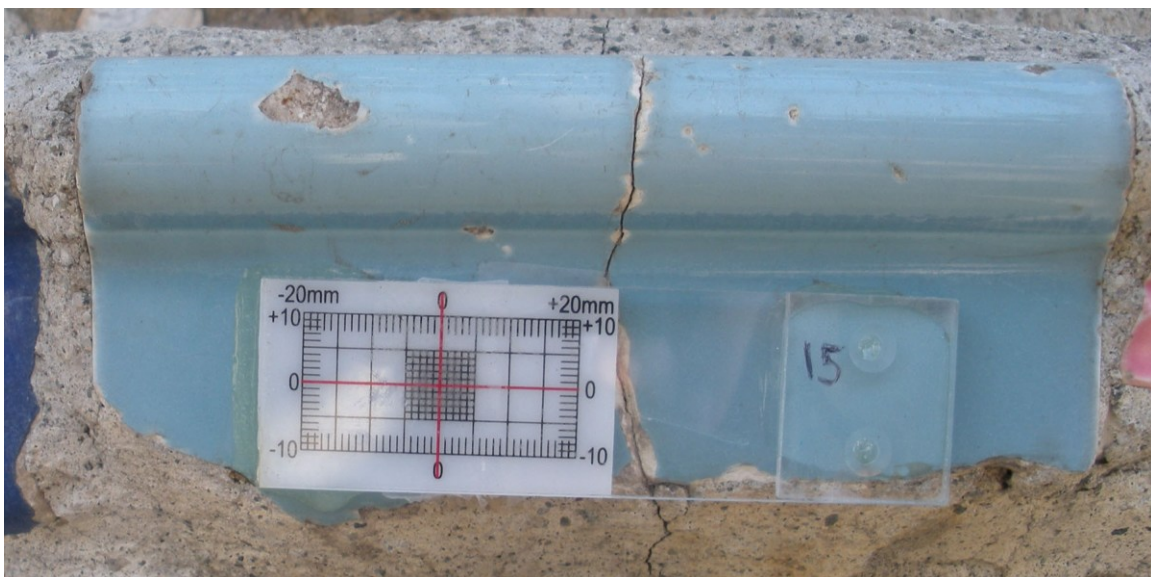


Figure 11: Telltale mounted with epoxy adhesive



Figure 12: Telltale mounted with plaster

While cracking caused by steel corrosion is normally indicated by the presence of rust staining (Figure 16), it is more difficult to determine if cracks are caused by structural movements or by thermal stresses.

To evaluate the frequency and magnitude of movements caused by traffic, wind, and seismic activity we installed six miniaturized accelerometers for vibration monitoring (Figure 17). While the monitors provided good data it turned out that their batteries need to be replaced every three days, which is not practical for a long term monitoring program. We therefore discontinued their use and are researching other types of accelerometers or the possibility of connecting these monitors to an external power source (either the grid or solar).

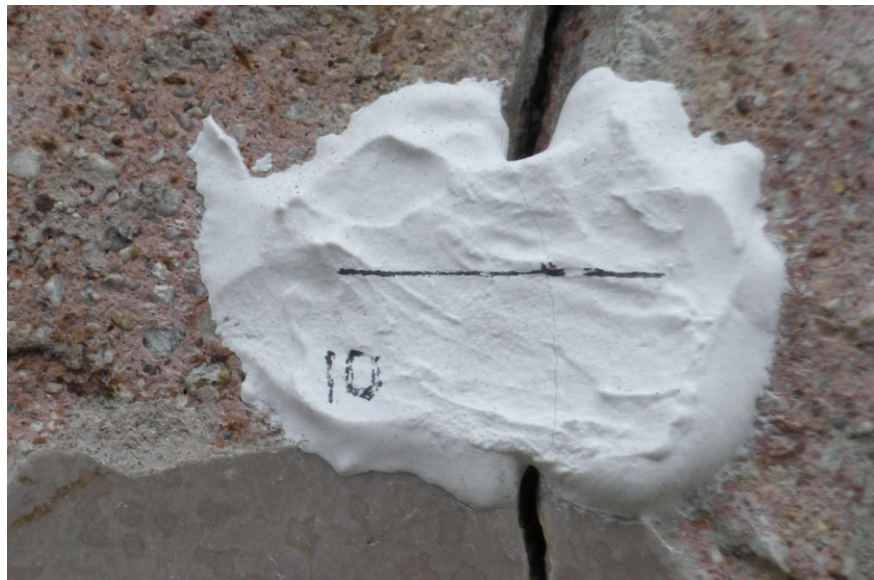


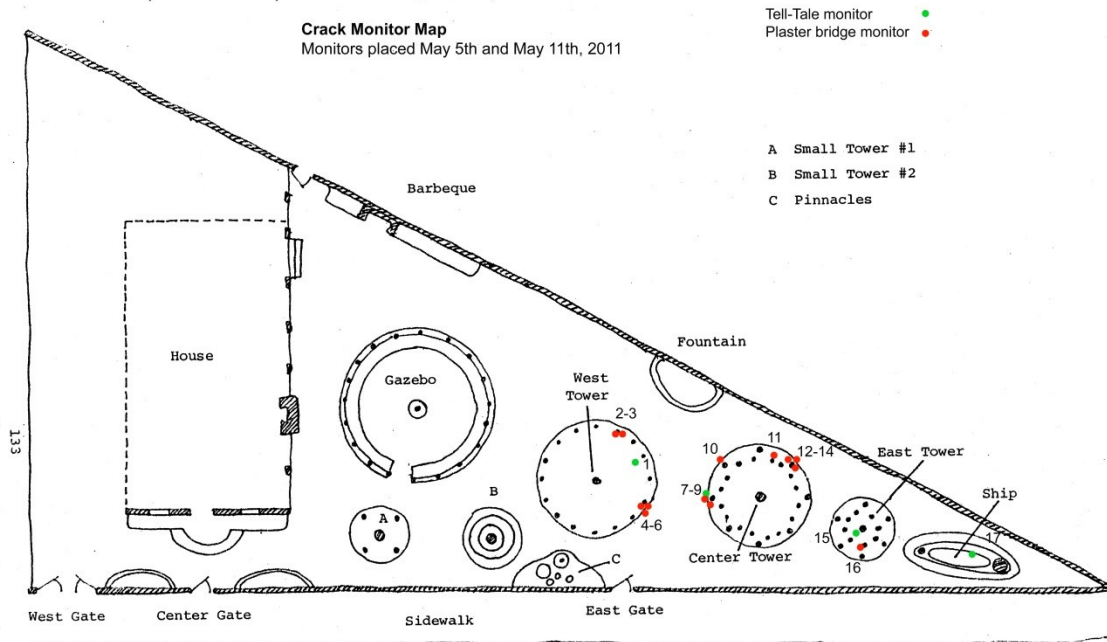
Figure 13: Plaster bridge crack monitor



Figure 14: Crack in plaster bridge

A 1988 report by ANCO Engineers, Inc., commissioned by the city, made a strong argument that many of the cracks are caused by thermal stresses. Spot measurements that we undertook on a cool spring day, using an infrared thermometer showed surface temperature variations from 51 °F to 108 °F with temperature differences between glass ornaments and adjacent cement of more than 10 °F. To gain a better understanding of the thermal situation we purchased a FLIR E60bx thermal imaging camera and are currently designing a thermal monitoring program.

It will also be important to be able to correlate vibration and thermal data with the environmental conditions on the site. We therefore also purchased a weather station (temperature, relative humidity, wind speed and direction, solar radiation, rain), which will be installed on top of the storage container.



SITE PLAN  
SIMON RODIA'S TOWERS IN WATTS  
THE EHRENKRANTZ GROUP  
AUGUST 1982

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Figure 72

Figure 15: Crack monitor locations



Figure 16: Cement spalling due to rust



Figure 17: Vibration monitors

### Fundraising

LACMA was awarded a \$10,000 gift from the Angell Foundation in Los Angeles for conservation efforts of the Watts Towers.

Notification is pending from a corporation for additional grant funds.

### Other

LACMA met with WTAC director on April 7, May 19, May 24, and June 10 to discuss collaborative programming. LACMA also met with USC (April 7), Watts Neighborhood Council (April 12), LA Commons (April 18), Watts Theater Company (May 22), John Outterbridge (May 23), Enoch Mack (May 20), WTAC staff (June 22), Watts Coffeehouse (June 22), Academy High School (June 30), WLCAC (June 30), and WHP (June 30) all in an effort to create sustainable partnerships, develop funding opportunities, and market the artworks.

Additionally, LACMA provided tours for the Presidents Circle (May 21) and a corporation (June 15). A Getty Multi-cultural intern, Evangelyn Delacare, is working on Watts projects for the duration of the summer.

Finally, LACMA hosted a “Partners Lunch” on June 22 for DCA, WTAC, and LACMA staff.

### Goals for 3<sup>rd</sup> and 4<sup>th</sup> Quarter

Since most of the activities are going to take place concurrently the list below does not reflect priorities. Not all tasks will be started and/or completed within the next quarter

- Hire Assistant Conservator and Research Assistant(s)
- Hire student(s) from USC

- Continue to secure loose, endangered ornaments by facing or other appropriate means
- Begin thorough condition survey of the lower parts of the monument
- Expand crack monitoring program
- Identify and install improved vibration monitoring device
- Design and start thermal monitoring program
- Install weather station
- Contact experts in monitoring of structures
- Contact experts in corrosion monitoring
- Identify and start testing of elastomeric crack fillers, adhesives, and water repellents
- Develop and evaluate a Filemaker Pro™ based database
- Continue review, re-organization and re-housing of previous treatment reports
- Continue inventory and re-housing of collected detached ornaments
- Continue search for historic photographs
- Develop the document for recommended long-term care of the artwork

Respectfully submitted by Frank Preusser, Senior Conservation Scientist, Conservation, with support from Mark Gilberg, Suzanne D. Booth and David G. Booth Conservation Center Director, and Brooke Davis Anderson, Deputy Director for Curatorial Planning, LACMA.

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