

September 2012



**LACMA, DCA, and Watts Towers**

**Progress Report January 2012 through June 2012 (Fifth Progress Report)**

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



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**Summary**

During this reporting period we continued the organization and review of existing documentation and information (hardcopy and electronic). Work on the fallen fragments was continued and good progress was made. GBG USA Inc. performed a comparison of the recently completed laser scan with the 1988 measurements carried out by Cook & Sons. No evidence for permanent deformation of the towers was observed. The remedial condition survey was continued and loose ornaments and mortar fragments were temporarily consolidated or reattached. Inspection and photo-documentation of the three tall towers using a spotting scope and camera with a telephoto lens continued in an effort to document the current state of preservation and to allow comparison with the Marvin Rand photographs. A ground penetrating radar survey of the floor was conducted by Ground Penetrating Radar Systems (GPRS) to determine the thickness of the slab and to detect the presence of voids. Research on potential crack fillers and repair mortars

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continued and a variety of materials were purchased for testing and evaluation. Data-logging crack monitoring equipment (strain gages and displacement sensors) was purchased from Texas Measurements and was installed.

### **Introduction**

Much of the work in the first six months of 2012 was essentially a continuation of work begun in 2011. The main goal was to further enhance our understanding of the monument and its problems and to lay the groundwork for a variety of repair materials and methods.

### **Accomplishments**

#### Staffing

Ms. Heather Goers left the team for personal reasons. Mr. Israel Campos' status changed from part-time to full-time.

#### Consultants

- Discussions with Mr. Mel Green (Melvyn Green & Associates, Inc.) centered on questions concerning the physical structure and stability of the floor and the foundations.
- GBG compared the 2005 scan data and the 1988 and 1994 Cook survey data with the latest scan data to determine if any permanent displacement of the Towers has taken place. It was concluded that no significant movement of the sculptures has occurred during the past 25 years.
- Bruno Pernet from the California State University Long Beach has begun a study of the seashells on the Towers.<sup>1</sup>
- Nils Fox from Sika Corporation visited Watts Towers on March 28 to discuss the need for improved crack fillers, repair mortars, and adhesives.
- Behzad B. Bavarian from California State University Northridge was contacted concerning the potential use of migrating corrosion inhibitors at the Towers. An on-site meeting with Prof. Bavarian will take place in the near future.

#### Office

The re-organization and purging of the office files is near completion.

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<sup>1</sup> LACMA is only providing access to the site and to the existing photographic records.

### Chemical Safety

The MSDS binders and MSDS list were updated to include all new products acquired since December 2011. The semi-annual hazardous waste removal took place in June.

### General Safety

An Emergency Action Plan (EAP) and an Injury and Illness Prevention Program (IIPP) have been implemented and the mandatory training sessions have taken place on February 9.

The storage container was completely cleaned out and the old deteriorated wood shelving removed and new steel shelving installed. The content of the container was re-organized and is now more easily and safely accessible. Broken tools and old conservation materials (far beyond shelf life) were properly disposed of. Some materials were donated to the WTAC.

### Site Maintenance and Improvements

The site is surveyed daily for any fallen ornaments and other problems. The daily survey also includes visual examination for new cracks or significant changes in existing cracks.

### Archival Research

Ms. Colleen Boye completed re-organizing, re-housing, and creating an inventory of the treatment records from the state (over 4,000 records). There are now three sets, one at the Watts Towers Conservation Trailer and two at LACMA.

Ms. Kimberly Blanks completed the re-housing of the numbered rolls of City treatment photographs, completing 16 binders consisting of 123 photo rolls.

### Treatment Database

Ms. Colleen Boye completed the first version of the new treatment database, which is currently undergoing beta-testing.

### Re-Photography of the Artwork

The re-photography of the areas originally documented by Marvin Rand in 4x5 format was completed by Yosi Pozeilov. Ms. Blanka Kielb continued the re-photography of the three tall towers using a telephoto lens.

The floor was re-photographed by Frank Preusser

### X-Radiographs

Over 60 X-radiographs were taken at various locations of the Towers in the past. These provide considerable insight into past interventions particularly with regard to the

replacement of the original steel armature and crack propagation. To date, over 40 of these radiographs have been digitized.

### Inventory of Detached Ornaments

Ms. Kimberly Blanks has continued to make good progress. She has re-housed approximately 76 fragments/fragment groups and entered 101 fragments/fragment groups into the database.

### Condition Survey

The remedial condition survey and stabilization of loose ornaments and mortar made good progress. The lower 15 feet of all sculptures have been completed. The overheads will be addressed in July/August.

The rolling scaffold was assembled for the documentation, condition survey, and remedial stabilization of the overheads. Sylvia, Blanka and Israel completed the photography of the overheads.

A loose green mortar fragment on the exterior of the SWA (Panel 11) was stabilized by pinning and injection with modified epoxy.

### Evaluation of Tower Movement

GBG USA Inc. compared the 2005 scan data and the 1988 and 1994 Cook & Sons survey data with the latest scan data to determine if any permanent displacement of the Towers has taken place. The tops of the three tall Towers showed displacements between 0.15” and 0.18”, far below the measurement error. The displacements of the tops of the fireplace smokestack, the Gazebo Spire, and the Ship Spire range from 2.03” to 4.51”. These displacements are most likely caused by the restorations carried out after the Northridge earthquake and the subsequent damaging rainstorms. It is safe to conclude that no significant movement of the sculptures has occurred during the past 25 years.

### Floor Study

To address concerns about potential movement of the floor and suspected soil erosion under the slab a ground penetrating radar survey of the floor was conducted on April 23 and 24. Ground Penetrating Radar Systems (GPRS) carried out the GPR survey of the floor to determine the thickness of the slab and to detect the presence of voids. Only three small voids were observed. The thickness of the floor was found to vary from 2.5 to 4.25 inches.

Three 6 inch cores<sup>2</sup> from the bases of the three tall towers were extracted and analyzed. These were found to consist of 3-5 distinct cement layers including the top pigmented layer.

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<sup>2</sup>These cores were drilled and reset at some unknown time in the past.

The flower bed next to the house and the East planter along the South wall were excavated to permit visual examination of the floor structure and to confirm the presence of new footings from past interventions. The floor slab and footings were measured and photographed. The soil was passed through an archaeological screen (1/4 inch) and found fragments documented and stored for future study. After the documentation was completed both areas were backfilled with the screened soil.

A detailed map of the cracks in the floor was generated by Israel and compared with previous surveys conducted by ARG and Marvin Rand. Few differences were observed.

#### Evaluation of Changes since Rand Photo Campaign

Mr. Israel Campos continued comparing the Rand photographs with the current state of preservation of the monument. Any observed changes were marked on the recent photos taken by Mr. Yosi Pozeilov during the re-photography of the Towers. Israel has completed this comparison for the interior and exterior South Wall, the interior North Wall, and the Ship. His analysis has revealed that a number of significant changes have occurred over time including loss of original ornamentation, old mortar and crack repairs, reorientation of original decorative elements, change of shape and construction, and the formation of new cracks.

#### Evaluation of Cracks

Monitoring of selected cracks with plaster bridges and telltales continued. We also continued monitoring cracks to determine if they are propagating lengthwise.

#### Weather Station

The Weather Station continues to reliably record the environmental conditions. The data are downloaded and processed at regular intervals by Ms. Kimberly Blanks.

#### Thermal Imaging

Currently the thermal imaging program is on hold due to other, more pressing issues.

#### Weather Events

A wind and rain storm was recorded on March 18 and an incident report was prepared. No significant damage was found.

#### Next Steps

In the second half of 2012 we plan a variety of activities:

- Complete remedial survey of the overheads.
- Installation of data-logging crack monitors and displacement sensors.
- Identification, purchase, and installation of data-logging vibration monitors.

- Development and implementation of a detailed testing program for repair mortars, adhesives, and elastomeric crack fillers.
- Begin evaluating migrating corrosion inhibitors.

Fundraising

No updates this quarter.

Respectfully submitted by Frank Preusser, Senior Conservation Scientist, Conservation and Mark Gilberg, Suzanne D. Booth and David G. Booth Conservation Center Director.

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