



Watts Towers of Simon Rodia State Historic Park

Conservation Program
Department of Cultural Affairs
City of Los Angeles

Mayor

Antonio R. Villaraigosa

Councilwoman, District 15

Janice Hahn

Executive Director, Department of Cultural Affairs

Olga Garay

History

1921 Simon Rodia began construction

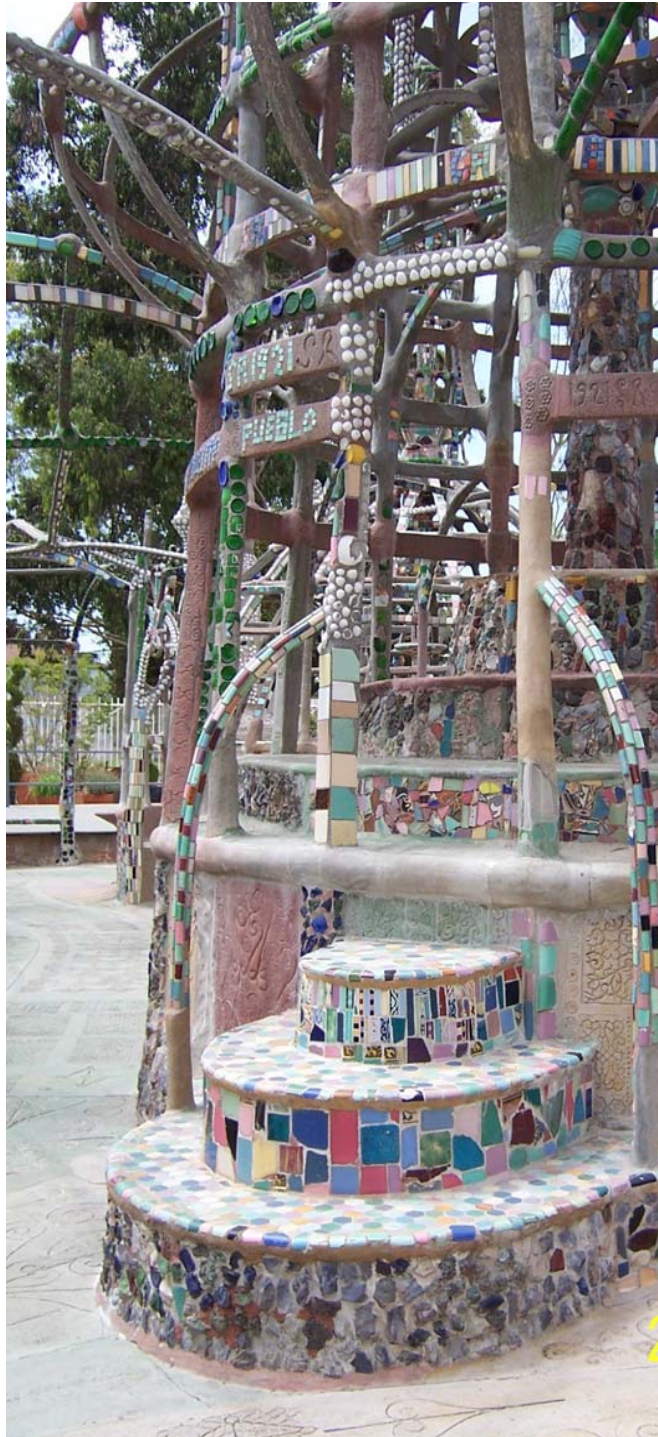
1955 Construction ceased

1963 Historic-Cultural Monument #15
- City of Los Angeles

1977 National Register of Historic
Places - National Park Service

1990 National Historic Landmark
- National Park Service





History of Ownership

1921 – 1955 Simon Rodia (1879-1965)

1955 Louis Saucedo (neighbor)

c1955 – 1959 Joseph Montoya

1959 – 1975 William Cartwright/Nicholas King
(Committee for Simon Rodia's
Towers in Watts)

1975 – 1978 City of Los Angeles
Department of Public Works

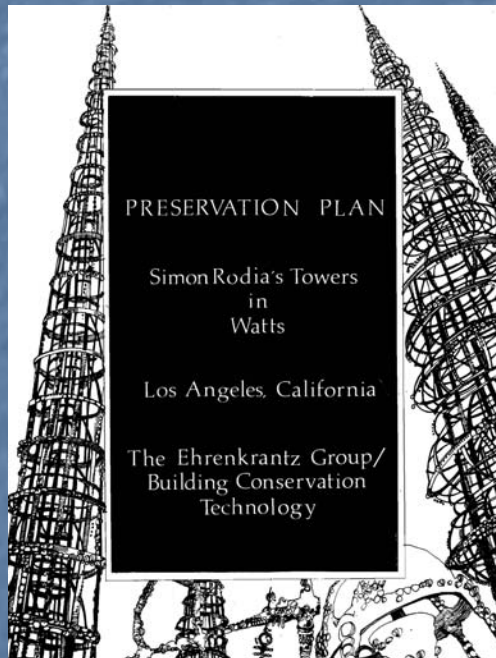
1978 – Present
Department of Parks and Recreation,
State of California

Conservation and tour programs operated by
Department of Cultural Affairs under an 50-year lease
(1978-2028) with Department of Parks and
Recreation.

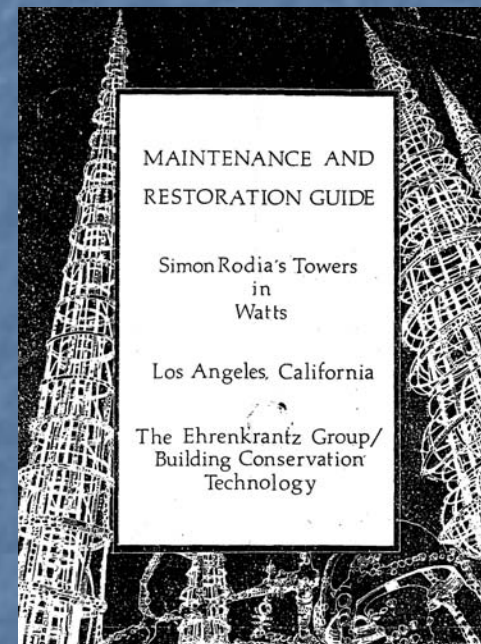
Watts Towers Restoration Handbooks

The 1983 Ehrenkrantz Group Reports

Preservation Plan



Maintenance and Restoration Guide



*Secretary of the Interior's Standards for Rehabilitation
and Guidelines for Rehabilitating Historic Buildings*

*Guidelines for Practice of the American Institute for
Conservation of Historic and Artistic Works*



DCA Conservation Staff

1987 – 1988	Conservator, Myrna Saxe (PT contractor)
1987 – 2000	Engineer, Bud Goldstone (PT contractor)
1988 – 1994	Conservator, Zuleyma Aguirre (PT contractor)
1991 – present	Historic Site Curator, Virginia Kazor (FT)
1994 – 2006	Conservator, Zuleyma Aguirre (FT contractor)
2000 – present	Structural Engineer, Melvyn Green (PT contractor)
2006 – present	Conservator, Zuleyma Aguirre (FT)
2006 – present	Conservation Technician, Clinton Peterson (FT)

DCA Conservation Staff Responsibilities

Conservator –

Assesses condition and performs Conservation procedures; trains and supervises conservation technicians; reviews completed work

Historic Site Curator –

Provides administrative support including: site management, grant and report writing

Conservation Technician –

Executes repairs under the supervision of the conservator

DCA Consultant

Structural Engineer –

Examines damage and designs structural repairs



Preservation/Conservation Philosophy



Adopted in 1978, the basic philosophy is to: repair all cracks in the mortar coverings; remove rust from steel; replace damaged reinforcements; and clean, reattach and preserve ornaments. Conservation of the Towers is endless.

"The problems are born of the nature of the towers and their creator on one hand, and the limits of building science on the other." *Maintenance and Restoration Guide*

"Much of Simon Rodia's . . . effort consisted of painstaking and persistent repair." *Maintenance and Restoration Guide*

"Permanent solutions are elusive because of structural indeterminacy."

Melvyn Green, Structural Engineer



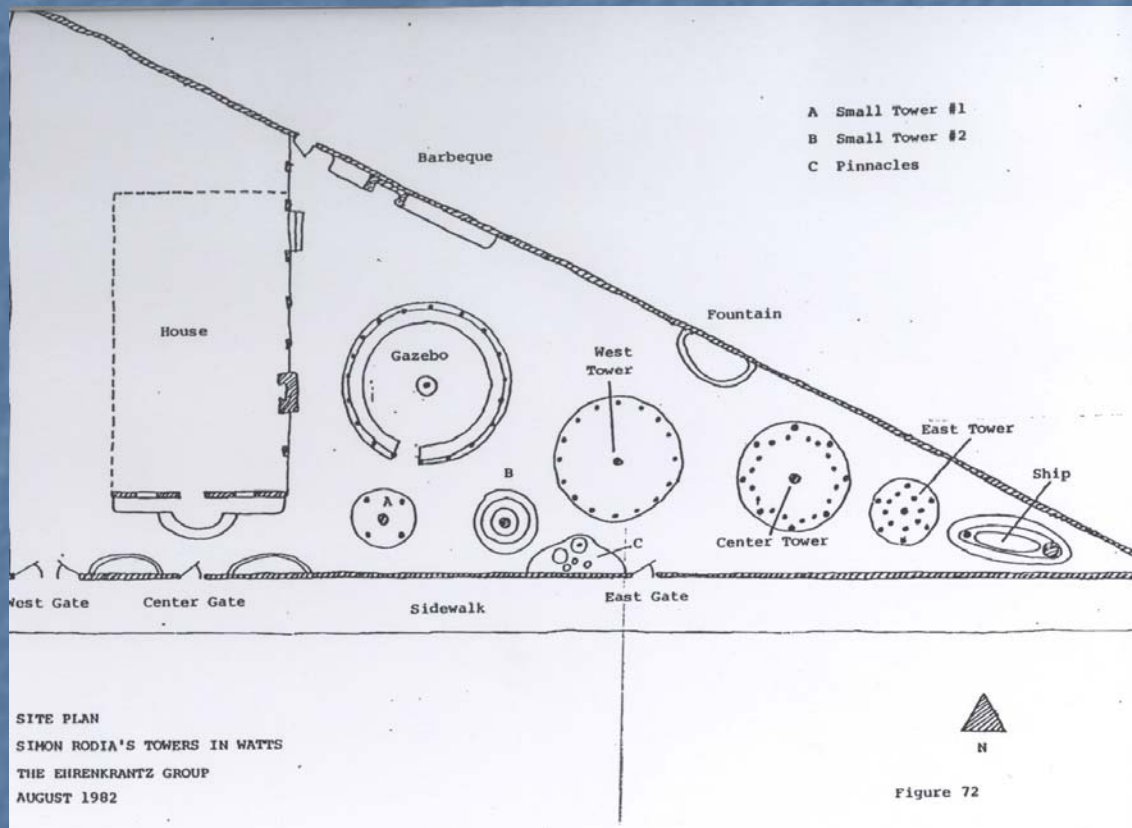
Method of Construction

Metal armature made of short pieces of steel that overlap are held together with steel or copper wire (Rodia used no welds).

Mortars of varying composition and consistency cover the framework.

Decorative elements including tile, crockery, glass and sea shells are embedded in the soft mortar.

The Conservation Challenge



Prevent water from penetrating through mortar cracks on:

17 sculptures

2,500 joints

54 slender columns

159 exterior bands

64 wall panels

160 overhead arches

Why do cracks occur?

Seismic activity (1994 Northridge earthquake)

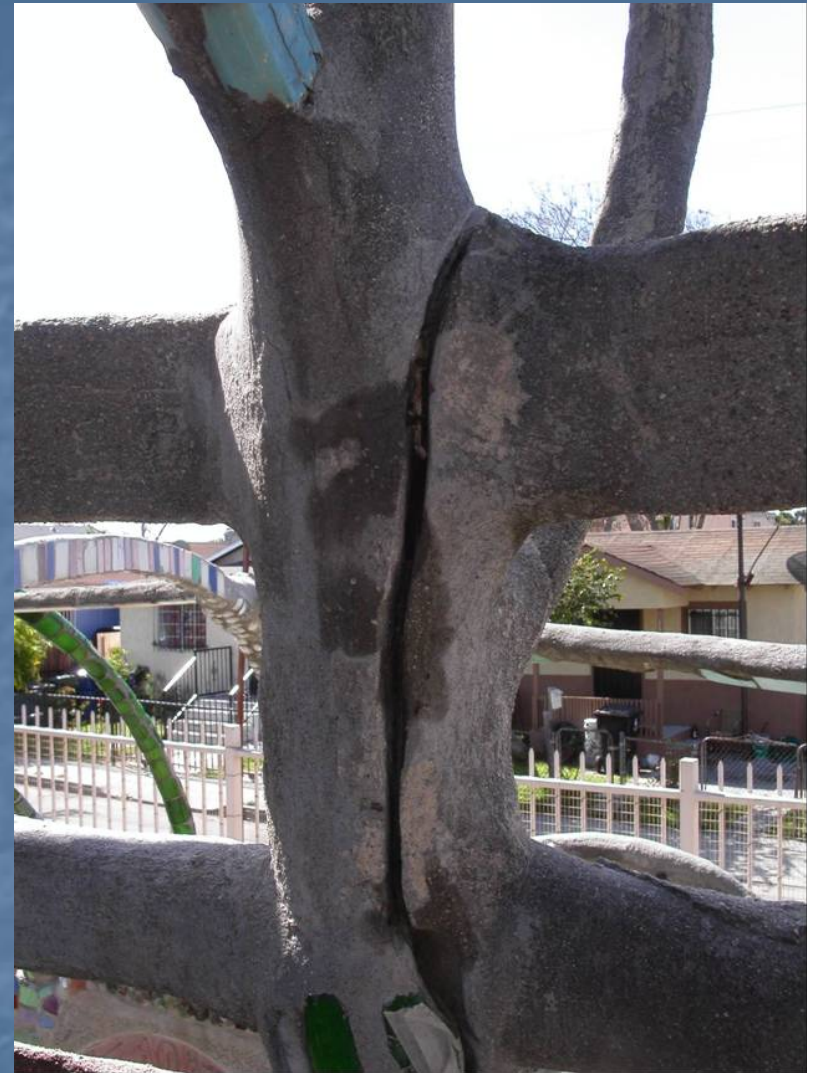
Hail storms (2003)

Wind storms

Rain storms (2004-2005)

Vibration

Natural degradation of materials





Structural Conservation Procedure

Photograph crack or compromised area

Open existing crack to assess condition of steel armature and photograph

Clean the exposed rusted steel where structural stability is not compromised

Remove compromised steel and replace with new material

Wrap steel with wire mesh

Cover with mortar and reattach decorative materials if applicable

Photograph finished repair

Description of a Typical Crack Repair



Photograph crack

Protect surrounding surface with polyethylene plastic

Clean crack with tools, brushes, water or air pressure

Degrease concrete with acetone

Inject epoxy into crack leaving a shallow void

Fill shallow void with custom concrete mix

Remove excess fill material

Either reattach original ornament or -
apply color and/or carve designs into concrete to
replicate original surface where appropriate

Photograph and enter repair information into database

Baseline Photographic Documentation



Photograph, Marvin Rand

Begun in 1986 and completed in 1992

Comprised of approximately 5000 images

Each keyed to a detailed grid and represents a four foot square area

The foundation for all conservation work

Ship of Marco Polo, North view, A level,
Photograph 1, 10.13.87

Documentation

Baseline photographs

Access database (transferred in 2001 from Paradox – now archived)

Digitization of historic records

Process



Photograph area to be repaired and compare to baseline photograph

Perform intervention including photography

Photograph completed intervention

Input data and images into database

Send paper data to City archive for storage

WATTS TOWERS OF SIMON RODIA STATE HISTORIC PARK CITY OF LOS ANGELES DEPARTMENT OF CULTURAL AFFAIRS CONSERVATION WORKSHEET			
			1577 DR CA FEMA
BY PROJECT CONSERVATOR OR ENGINEER			
Assigned by	Z AGUIRRE	2/24/2008	Assigned to PETERSON 11/14/2008
	Name	Date	Name Date
TASK (CIRCLE ONE)			
INSPECTION	EMERGENCY STABILIZATION	<input checked="" type="checkbox"/> CONSERVATION	STORAGE METHOD DEVELOPMENT
BASELINE LOCATION CTO_SSW_K_O_20081114_R87_DIG_IMG100_3818			
BY DATA ENTRY OPERATOR Data Entry by: C. Peterson 4/7/2009			
Damage Location (Overlay Grid on Baseline Location) Name Date			
BY PERSON PERFORMING ASSIGNMENT			
BASELINE LOCATION CTO_SSW_K_O_20081114_R87_DIG_IMG100_3818 11/14/2008			
Name Date			
DAMAGE LOCATION: PARTS OF SCULPTURE (COPY ONSITE) CENTER TOWER		REPAIRS MATERIALS AND TECHNIQUES DESCRIPTION	
Members Numbers /or Name EXT.COL # 3		MORTAR CUSTOM MORTAR MIX	
Circle those applicable		LAYERED MORTAR 2 COATS	
I AM LOOKING AT: HORIZONTAL UP DOWN		METAL REBAR	
INSIDE OUTSIDE TOP BOTTOM		METAL MESH	
OF THE MEMBER		WIRE	
Elevation in feet from the ground 40' 00"		ADHESIVE & CAULK SIKADUR 35, 31	
EXISTING DAMAGED MATERIALS:		DECORATIVE ELEMENTS 2:1 Ratio Mixed	
Circle those applicable		GLASS	
MORTAR SINGLE REBAR MULTILAYER MESH		SEASHELL	
METAL WIRE		GLAZED TILES	
ADHESIVE & CAULKS TYPE		POTTERY	
ORNAMENTS & DECORATIONS		METALWARE	
POTTERY ORANGE SEASHELL GLASS GLAZED TILES		ROCKS	
METAL WORK ROCKS STATE REPAIRS INCISIONS & FORMS		INCISIONS/FORMS	
OTHER		STORAGE	
CRACK IN CONCRETE: VERTICAL 1		DESCRIPTION & SIZE OF PIECE	
		ID.# DATE	
		LOCATION OF STORAGE	
11/14/2008 Dig. Img. # 100_3803			
11/14/2008 Dig. Img. #100_3818			
Before Treatment		Dig Img100_3818_After Treatment	
JOINT			
ENTRIES	R87	OPERATION 4	2005 STORM DAMAGE
TECHNIQUE 1	USED SMALL CONSERVATION TOOLS TO CAREFULLY REMOVE LOOSE MORTAR		
TECHNIQUE 2	CRACK IN CONCRETE: SLIGHTLY OPENED, CLEANED AND DEGREASED W/ ACETONE; EPOXY PATCHED		
TECHNIQUE 3	FILLED THE LACUNE WITH CEMENT AND SILICA SAND 3:1 RATIO MIXED, CLEAN EXCESS		

Reviews of Conservation Practices and Records

- 2004 DCA contract staff Structural Engineer, Melvyn Green and Conservator, Zuleyma Aguirre request State review of conservation work done to date
- 2005 State Parks retains Architectural Resources Group (ARG) Phase I - *Evaluation and Conservation of Fissures Report*
- 2006 State Parks commissions ARG report Phase II *Documentation Synthesis and Materials Research*
- 2008 F.E.M.A. awards \$569,000 reimbursement for storm damage repair award based upon, "sufficient, credible records document the condition of Watts Towers before and after the 2005 January winter storms"



Architectural Resources Group (ARG)

Evaluation and Conservation of Fissures
Report
for
Watts Towers State Historic Park
Los Angeles, California



Evaluation and Conservation of Fissures Report - 2005

Assessed existing condition and evaluated potential treatments for the fissures found in the upper portions of the three tallest structures and ornamental floor.

RECOMMENDATIONS

1. Implement routine inspections every 2-5 years
2. Do further documentation research and materials testing
3. Perform tests to determine the concentration of moisture
4. Replace existing incompatible repairs

Architectural Resources Group (ARG)

Evaluation and Conservation of Fissures Report - 2005

Action Taken to Date on Recommendations

1. Most recent inspection completed in 2009
2. Selected testing completed by Conservation Consultant, Rosa Lowinger – temporarily on hold due to lack of funding
3. Moisture testing on hold due to lack of funding
4. Existing incompatible repairs are being corrected as part of the F.E.M.A.- funded repairs

Architectural Resources Group (ARG)

Documentation Synthesis and Materials Research Final Report - 2006

Documentation Synthesis and Materials Research
Final Report
for
Watts Towers State Historic Park
Los Angeles, California



Synthesized previous documents and researched materials and methods for crack mitigation and repairs.

RECOMMENDATIONS

1. Create a web-based, three-dimensional computer model to facilitate public access to documentation
2. Identify appropriate archive for record retention
3. Update computer technology
4. Update baseline photograph documentation
5. Regularize maintenance program

Architectural Resources Group (ARG)

Documentation Synthesis and Materials Research Final Report - 2006

Action Taken to Date on Recommendations

1. A dedicated server needs to be acquired to implement recommendation
2. Paper records are now sent to the City archive for record retention
3. Hardware has been acquired – software on hold pending funding
4. Photographic updating is part of crack repair documentation
5. F.E.M.A.-funded disaster work in progress but regular maintenance is unfunded

Reviewer's Comments

"The on-going conservation work is being carried out in an appropriate manner consistent with generally accepted standards of conservation of works of art and architecture." **ARG - 2005**

"Sufficient, credible records document the condition of Watts Towers before and after the 2005 January Winter Storms . . ." **FEMA - 2007**

"The work of the DCA conservation crew has been scrutinized and vetted many times by the Getty Conservation Institute, Architectural Resources Group as well as DRP staff. We are confident the Cultural Affairs staff is doing everything possible (given the current fiscal environment) to follow the correct conservation standards and procedures in all their work at the Towers." **California, Department of Parks and Recreation - 2008**



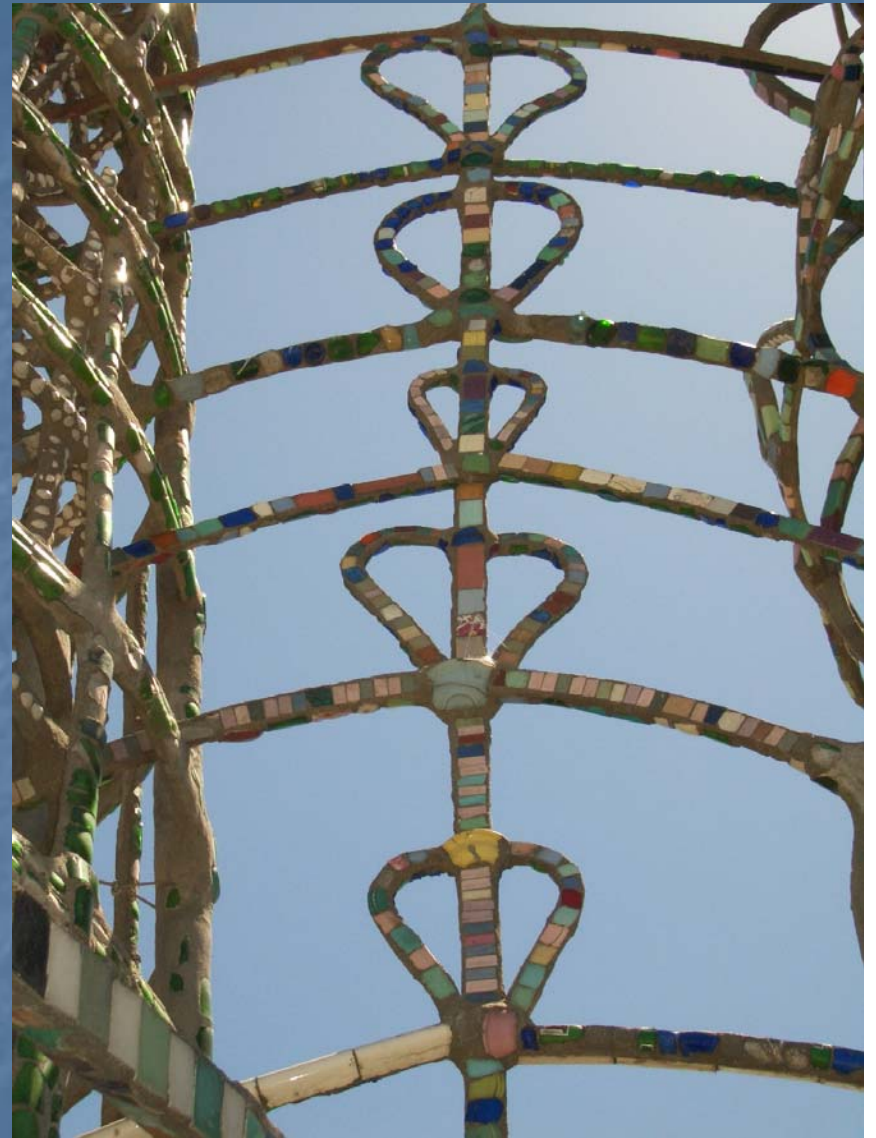
Funding Sources (1991 – 2009)

City of Los Angeles –
Administration and Salaries
\$ 1,520,395

State & Federal Government Grants
\$ 3,320,000

Foundation Grants
\$ 155,000

TOTAL = \$ 4,995,395





DCA Wish List

State Parks Master Plan

New Materials Testing

Structural Analysis Tests

Conservation Handbook Update

Digitization of Historic Documentation

Virtual 3-D Model

Disaster Claim Process — Emergency & Permanent Work



Emergency Work — The immediate response to a disaster (reimbursable even if claim is later deemed ineligible)

Stabilization of site, photographic documentation and fragment collection

Estimate of damage repair submitted to CAO

CAO submits request to F.E.M.A. through O.E.S.

F.E.M.A. conducts site visit and reviews claim

Permanent Work — The second phase response where cracks are temporarily sealed pending complete restoration

Disaster work subject to F.E.M.A. deadline

Disaster expenses are reimbursable

Summary



- The Watts Towers historical landmark is vulnerable to natural disaster and suffers from the deterioration that is accelerated by atmospheric conditions. To preserve this masterpiece, Watts Towers requires constant monitoring and on-going conservation.
- All current conservation work follows strict guidelines established for the site in the Ehrenkrantz Reports.
- All work is documented for present and future generations.

City of Los Angeles Department of Cultural Affairs

Olga Garay, Executive Director
Saul Romo, Assistant General Manager

Historic Preservation Division Staff

Virginia Kazor, Curator
Jeffrey Herr, Curator
Zuleyma Aguirre, Conservator
Clinton Peterson, Conservation Technician

Prepared by Jeffrey Herr, 15 May 2009
Photography by Zuleyma Aguirre
and Clinton Peterson
Baseline photograph by Marvin Rand

