

THE WATTS TOWERS  
FINAL CONSERVATION REPORT

for efforts on

THE CANOPY

April 1995

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under contract C89122  
for the Cultural Affairs Department, City of Los Angeles

CONSERVATION OF THE CANOPY  
WATTS TOWERS CONSERVATION PROGRAM  
April 1995

This is a report on the conservation work performed by the Cultural Affairs Department, City of Los Angeles, between January 1986 and April 1995 on the Canopy sculpture on the site of the Towers of Simon Rodia State Historic Park, 1765 East 107th Street.

**HISTORY OF THE SCULPTURE**

The Canopy was built by Rodia after 1929 and completed before 1939. Figure 1 (c1929) shows the original house, without the Canopy, from the southwest and Figure 2 (c1939) shows the Canopy joining the South Wall to the House on the far left of photo, along with the partly finished West Tower. Figure 3 (c1951) shows the Canopy on the left center with the South Wall in the foreground. Although the house was burned to the ground in 1955, the Canopy was probably not damaged in the fire.

**CONSERVATION PROGRAM SUMMARY**

**Background**

Some mortar cracking failures and exposed, rusted steel were evident in the Canopy before the January 17, 1994 Northridge earthquake and the January 1995 rains and floods. Inspection of the Canopy and its vertical supports within the South Wall after the earthquake and aftershocks showed newly opened cracks in the Canopy and in the supports. Additional damage was found on the upper surfaces of the canopy after the January 1995 rains. Primary causes of cracking before the January 1994 and January 1995 events have been vandalism, inadequate end connections to the steel reinforcements and environmental influences-wind, earthquakes and other dynamic forces from Southern Pacific trains immediately to the north and to the west, aircraft, and trucks. In late 1985 the Cultural Affairs Department took over responsibility for the site.

Preliminary Phases- photography, emergency stabilization and inspection.

Formal "Baseline" photography of the Canopy took place in 1988.

A detailed inspection in 1989 identified 6 significant cracks in the mortar and documented 56 broken ornaments and 29 missing ornaments. Inspection revealed exposed, rusted mesh and rebar on the east beam on the south half of the Canopy and loose mortar on the south half of the Canopy on the east beam.

## Conservation of the Canopy

There were no emergency conservation steps taken until after the Northridge earthquake in 1994 when vertical supports were placed under the entire Canopy and scaffolding was erected to perform the necessary earthquake repairs.

### **Materials Test Program**

Following the inspection, a test program was established to select suitable conservation materials and techniques for replacing damaged reinforcements, preserving the remaining ornaments, restoring the bonds between the mortar and ornaments and mortar and steel reinforcements, and cleaning and consolidating the ornament surfaces and protect them from further deterioration (see Appendix, Watts Towers Materials Tests Report).

Engineering analyses of failed areas were performed to provide guidance in the design of repairs and for replacements of structurally inadequate reinforcements. A staff of assistants was trained to perform the work under technical supervision of contract conservation and engineering consultants. The selected materials and processes were then applied to the sculpture and instructions were incorporated into the controlling document, The Watts Towers Conservation Handbook.

### **Program Scope**

This document is a report on the final conservation effort which consisted of: replacing damaged and/or inadequate vertical and horizontal reinforcements at both ends and within the Canopy; reinforcing or replacing the vertical supports and footings under vertical supports; adding steel connectors to the House Facade from the four main Canopy beam ends and welding the connectors to a new horizontal support across the top of the House Facade; cleaning and consolidating ornaments; and filling all cracks.

A summary of treatments which were applied is shown in the Appendix "Watts Towers - Canopy Conservation". This summary is a printout of only a small portion of the computer data files "CANCONS". Identified in the summary for each treatment are:

- a) the elevation code - A is 0 to 4 feet, B is 4 to 8 feet, C is 8 to 12 feet.
- b) the side of the member receiving treatment (View direction)
- c) the initial problem found during inspection in 1989
- d) the treatment date
- e) the conservation materials used
- f) the treatment process used on the member.

## Conservation of the Canopy

The results of the baseline photography, emergency stabilization and inspection operations have been documented previously, and reports and records are on file in the Watts Towers conservation office trailer.

### **Cost estimate**

The total estimated cost for conservation of the Canopy sculpture was \$18,000. Included in the cost were: baseline photography \$300; inspection \$500; and design and application of conservation processes or structural conservation \$17,000.

### **Structural Conservation** (See Figure 7 and subsequent)

Conservation materials treatments consisted of cleaning, rebonding broken ornament pieces together, rebonding loosened or detached ornaments to the mortar coverings, filling cracks around ornaments, rebonding mortar-to-mortar, adding pigment-based coloring to mortar repairs, and applying consolidants to ornament surfaces. Cleaning was normally accomplished using distilled water. Glazed tile cleaning was performed using Brasso. Rebonding ornaments to the original mortar was done with either Jahn mortar or cement mortar. Rebonding mortar-to-mortar (where cement mortar was not used) was accomplished with Sikadur 23 epoxies. Various pigments were used to match repair mortar color with the originals and then the surface was covered with Siline for waterproofing. The consolidant used for shells was a mixture of GE DF 104 and Acryloid B-72 (Bologna cocktail).

Small crack-filling around ornaments and in other, non-structural areas was accomplished using Jahn restoration mortar purchased from Cathedral Stone Company, Washington, D.C. Please see "Watts Towers Materials Tests Report" and "Watts Towers Canopy Conservation" tables in the Appendix.

Large crack filling and foundation work was accomplished using either Portland cement mortar or Jahn mortar.

## CONSERVATION OF THE CANOPY

The local, commercial sand used to mix the cement mortar was a 1:2:3 mix of #12, #16 and #60 to match that originally specified by the State of California. Major conservation efforts included shoring up the sculpture after the Northridge earthquake, securing it to the House Facade, replacing the major vertical supports within the South Wall, and replacing damaged and failed ribs within the Canopy itself. After the January 1995 rains and floods, the entire upper surface

## Conservation of the Canopy

of the Canopy was covered with a thin layer of cement mortar. Whenever possible, the original mortar covers were carefully removed, ground from the inside into a thin shell of mortar containing the original ornaments, cleaned inside and out and reinstalled over new mortar and the new structural steel reinforcements.

### Conservation Applications:

Cleaning with water/cotton swabs 102 tiles; 58 glass & 167 pottery.

Cleaning cracks measured 36.71 and 70 millimeters in depth.

Cleaning and consolidation with B-72 - 0 shells.

Cleaning with Brasso - 102 tiles.

Rebonding mortar-to-mortar with Sikadur 23 - 17 places

Rebonding mortar-to-mortar with cement mortar - 21 places

Rebonding mortar-to-mortar with Jahn mortar - 8 places

## Conservation of the Canopy

### Chronology of Watts Towers Conservation

1954 to 1959: No repairs after Rodia left

1960 to 1971: Crack-filling with cement and waterproofing.

1987

*July*: Cultural Affairs Department computer and software acquired/installed

*October*:

- 6.1 and 5.5 Whittier earthquake
- Scaffolding erected on Gazebo for photography

*October to December*: Baseline photography taken

1988

*January*: 6 foot, chain-link security fence erected.

*March*: Scaffolding erected, emergency stabilization started.

*April*: Start of staff straining for inspection

*July*: Microfiche delivered.

*December*: Survey of 6 tallest sculptures completed.

1989

*April and May*: Filled large cracks with urethane foam.

*May*:

- Start of conservation materials selection test program.
- Inspection of House and Chimney

*August*: Start cleaning and consolidating sea shells and abalone shells

*September*:

- Inspection of all sculptures complete.
- Emergency stabilization complete.

1990

*January - March*: Evaluation of conservation materials from test program.

## Conservation of the Canopy

*March:* Began replacement and strengthening of Chimney foundation.

*June:* Reinstalled Heart atop junction of North and South Walls.

*August:* Modified sand sieve for cement to match State specification.

### 1991

*February:*

- Removed scaffold from Ship of Marco Polo
- Bean conservation work on Garden Spire

*March:* Began conservation work at D and E levels of "A" Tower.

*June 28:* 5.8 Sierra Madre earthquake.

### 1992

*January:* Heavy rains/winds

*February:* Garden Spire scaffold removed.

*April:*

- Review "A" Tower by GCI & LACMA Representatives.
- Civil unrest and riots.

### 1993

*August:* Began Chimney and spire conservation

*September:* "B" tower completed.

### 1994

*January:*

- Removed Chimney scaffolding
- Began House façade conservation.
- 6.8 Northridge earthquake and aftershocks.

*February:*

- Northridge earthquake aftershocks
- Propped up Canopy from earthquake aftershocks

*July:*

- Began Northridge earthquake repairs
- Increased staff member and daily schedule

Conservation of the Canopy

*October:* Completed House conservation except steps.

*November/December:* Review of House and Canopy conservation work.

Conservation of the Canopy

INSPECTION REPORT

June 27, 1989

NJG

WATTS TOWERS CONSERVATION PROGRAM  
CULTURAL AFFAIRS DEPARTMENT-CITY OF LOS ANGELES  
CANOPY INSPECTION RESULTS

Reference:

- a) Computer data file CANINSP June 1989
- b) Inspection sheets
- c) Microfiche records

The information presented below is based on inspections made by the inspection staff June 14 and 15, 1989.

Information is presented in 5 sections:

1. Rusted/exposed wire, mesh and rebar
2. Loose parts
3. Broken/missing major & minor load carrying members
4. Cracks
5. Broken/missing ornaments.

**SECTION 1 RUSTED/EXPOSED WIRE, MESH AND REBARS**

Inspection revealed exposed, rusted mesh and rebar on the east beam on the south half of the Canopy.

**SECTION 2 LOOSE PARTS**

See SECTION 5. BROKEN/MISSING ORNAMENTS for graphical computer-generated analyses of Canopy ornamentation. Inspection revealed loose mortar on the south half of the Canopy on the east beam.

**SECTION 3 BROKEN/MISSING MAJOR & MINOR LOAD CARRYING MEMBERS**

Inspection revealed no broken or missing load-carrying members.

**SECTION 4 CRACKS**

Inspection revealed 6 cracks in the Canopy. Two of the cracks measured 36.71 and 70 millimeters in depth.

**SECTION 5 BROKEN/MISSING ORNAMENTS**

Inspection revealed 56 broken ornaments and 29 missing ornaments. See Figure 1. Canopy Inspection.

# Conservation of the Canopy

## Summary

|         | Tiles | Ornaments<br>Glass | Shells | Pottery |
|---------|-------|--------------------|--------|---------|
| Broken  | 1     | 7                  | 0      | 48      |
| Missing | 0     | 4                  | 0      | 25      |

## PHOTOGRAPHS

Figure 1. Photograph c1929. Watts Towers site from southeast on 107th Street. House in left center of photo before Canopy addition. Photographer unknown.

Figure 2. Artist sketch c1939 of house and Watts Towers site from southeast on 107th Street. House south elevation with Canopy in lower left. Published in book 1940 and 4/28/39 in L. A. Times.

Figure 3. Photograph c1950 of House, Canopy and Watts Towers site from southwest on 107th Street. Canopy in lower left. Photo by J. Reed. Arts and Architecture July 1951.

Figure 4. Canopy sculpture top showing cracking failures after January 17 Northridge earthquake. Looking northeast from above. January 19, 1994.

Figure 5. Canopy sculpture top after January 17 Northridge earthquake. Looking west from above. January 19, 1994.

Figure 6. Canopy (top) over ornamentation on House Facade above front door. Looking north from entry. November 1993.

## GLASS TOWERS AND DEMON RUM

SIMON RODILLA is happy, nowadays. By accident, he discovered the joy of creative work and the remedy for his great trouble. The two were really one, and a facetious observer might say that the cure came from bottles.

'Twenty years ago,' Simon explains himself, 'I am all time *borracho* --- what you say drunk. My head, she is all time big like --- like lard can! She is big so she will hold the great aching from my drink. Then, one day, I am forget to drink! Like this!'

Simon is a tile-setter and a bachelor. For many years he has owned a home at 1765 East 107th Street, Watts. Seventeen years ago he began to build a tile wall around the lot. It was his own wall; no architect stood by to specify size and lines; Simon could let his fancy direct his hand.

'It is plenty fun! So I build my wall so much I am forget to drink. Then I am think of towers and not to drink. So ---'

Today, three huge towers and many smaller ones stand about his home. Built of tile, glass, empty bottles, they shimmer like peacock feathers and are visible for miles. Simon draws humorous parallels between the bottles of today and those of yesterday. Now, the empty flasks of other drinkers supply his materials. He, sober and happy, builds no dreams from bottles that are full.

Figure 2. Artist sketch c1939 of house and Watts Towers site from southeast on 107th Street. House south elevation with Canopy in lower left. Published in book 1940 and 4/28/39 in L. A. Times.

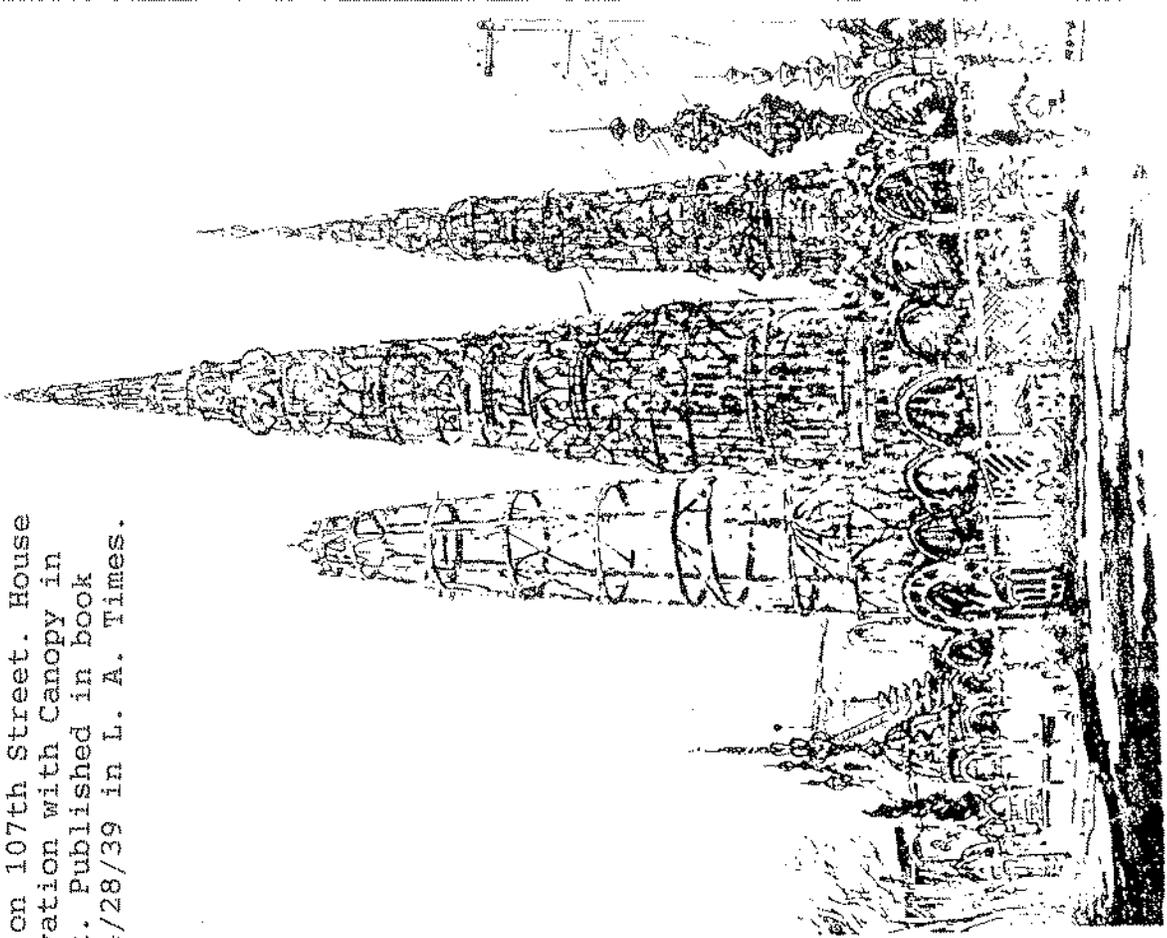
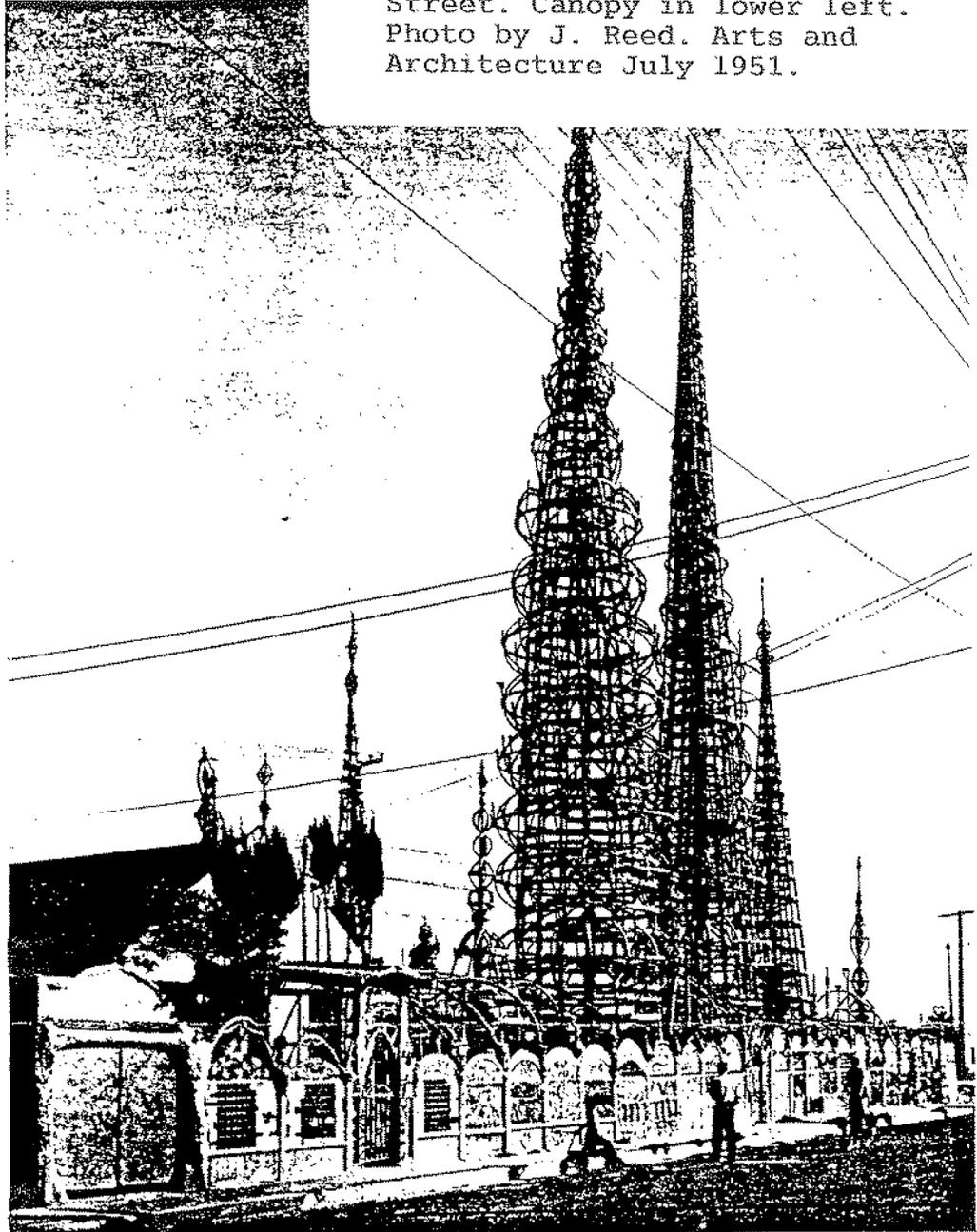


Figure 3. Photograph c1950 of House, Canopy and Watts Towers site from southwest on 107th Street. Canopy in lower left. Photo by J. Reed. Arts and Architecture July 1951.



**SAM OF WATTS** "I had in my mind to do something big and I did."





Figure 4. Canopy sculpture top showing cracking failures after January 17 Northridge earthquake. Looking northeast from above. January 19, 1994.

Figure 5. Canopy sculpture top after January 17 Northridge earthquake. Looking west from above. January 19, 1994.

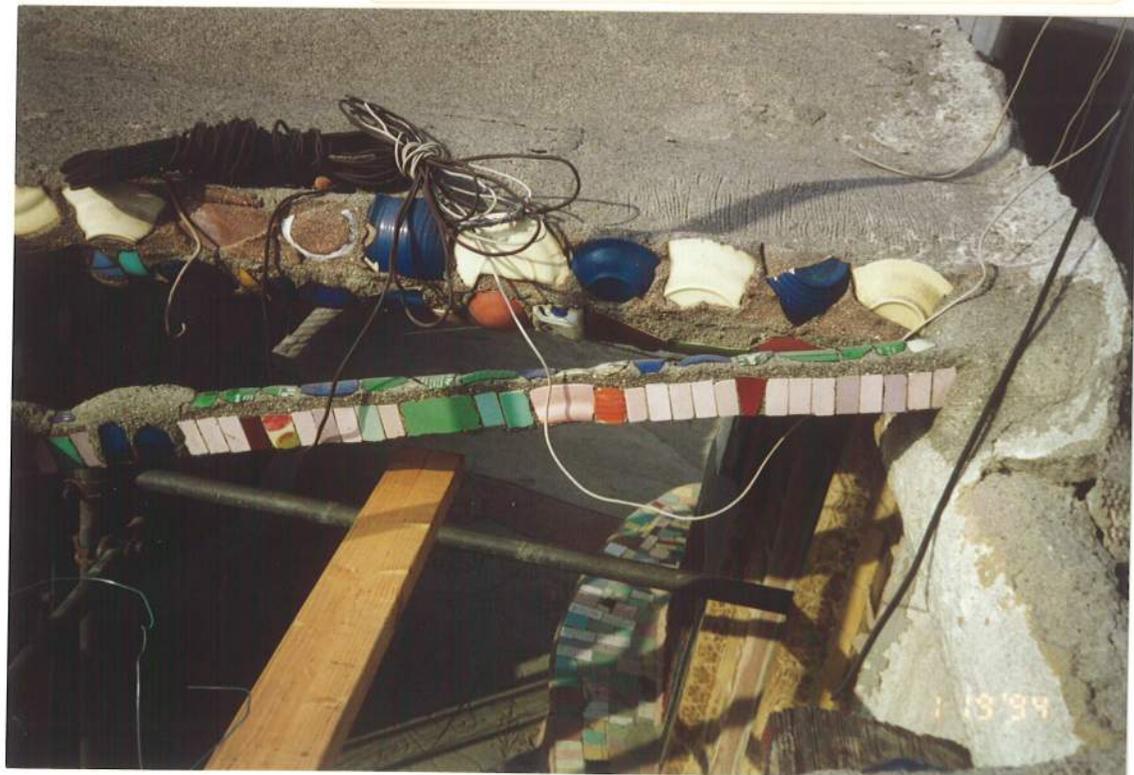




Figure 6. Canopy (top) over  
ornamentation on House Facade  
above front door. Looking north  
from entry. November 1993.