

THE WATTS TOWERS
CONSERVATION REPORT

for efforts on

THE "A" TOWER

October 16, 1992

prepared by N.J. Bud Goldstone
under contract C85230
for the Cultural Affairs Department, City of Los Angeles

CONSERVATION OF THE "A" TOWER
WATTS TOWERS CONSERVATION PROGRAM
OCTOBER 1992

This is a report on the conservation work performed by the Cultural Affairs Department, City of Los Angeles between January 1986 and October 1992 on the "A" Tower, one of 17 sculptures of the Towers of Simon Rodia State Historic Park, 1765 East 107th Street. Detailed reporting is provided in this report for the final phase of work since March 13, 1991.

HISTORY OF THE SCULPTURE

The "A" Tower is one of the first of the Watt Towers sculptures made by artist Rodia. Figure 1 shows the sculpture in a 1929 photograph. Rodia extensively modified all of the early sculptures. The significant differences since 1929 in this sculpture are:

- a). an increase in the diameter of the main column of the spire,
- b). the addition of decorative rings around the tall spire,
- c). addition of the lowest of the three horizontal bands below the spire and
- d). changes to the ornaments on the three lower bowls around the center column above the base.

The first three changes took place before 1946, Figure 2 and 3. Between 1949 and 1952, Rodia modified the surfaces and ornaments on the three lower bowls around the center column above the base.

CONSERVATION PROGRAM SUMMARY

On April 28, 1992 the conservation work performed since 1986 was reviewed by invited conservation experts Dr. William Ginell of the Getty Conservation Institute and Steve Colton of the Conservation Center of the Los Angeles County Museum of Art. The previous month each institution had been provided with an advance copy of this report. The conservation experts were sent by their institutions to provide comments and recommendations on Cultural Affairs' work on the sculpture. The review team was briefed and then inspected the "A" Tower from the scaffolding. The reviewers expressed satisfaction after their review that Cultural Affairs had done proper conservation work on the sculpture.

Background

Mortar cracking failures have been evident in the horizontal bands and vertical columns since 1958. No significant repairs were done since 1978 and there are no reliable records of prior repairs. In late 1985 the sculpture was in poor condition. Mortar cracks were evident on the four vertical columns supporting the 20 foot tall superstructure and in the three lowest horizontal bands connecting the columns. In 1988 it was observed that the spire swayed in the wind.

Preliminary Phases- photography, emergency stabilization and inspection.

After taking the baseline photographs, scaffolding was erected in March 1988 and emergency stabilization was performed from the scaffolding. Nylon netting was wrapped around ornaments to hold them in place and cracks were cleaned of debris and filled with

CONSERVATION OF THE "A" TOWER
CONSERVATION PROGRAM SUMMARY

urethane foam rods before being sealed with silicone to provide temporary protection against water intrusion. A detailed inspection in May and June 1989 identified 112 significant cracks in the mortar and documented 147 broken ornaments and 208 missing ornaments.

Materials Test Program

Following the inspection, a test program was established to select suitable conservation materials and techniques for replacing damaged reinforcements, preserve the remaining ornaments, restore the bonds between the mortar and ornaments and mortar and steel reinforcements, and clean and consolidate 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

The effort consisted of major replacements of reinforcements in horizontal bands and vertical columns, and the stabilizing of a quantity of loose sand in the base of the sculpture under one vertical column (no. 4). Additionally, three hundred eighteen (318) identifiable conservation procedures were performed on the sculpture. Included were the partial replacement of the pipe reinforcement of the center column, complete replacement of reinforcements in each of the three lower horizontal bands and one of the four vertical columns. 448 cracks were filled; 3,433 ornaments were cleaned. 1,833 shells and 220 rocks were cleaned, consolidated or reattached, 420 tiles were cleaned or reattached, 138 pieces of glass, and 822 pieces of pottery were cleaned or reattached.

A summary of treatments which were applied is shown in the Appendix "Watts Towers - "A" Tower Conservation". This summary is a printout of only a small portion of the computer data file "ATOCONS". 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, D is 12 to 16 feet and E is 16 feet to the top,
- b) the side of the member receiving treatment (View direction),
- c) the initial problem found during inspection in 1988,
- d) the treatment date,
- e) the conservation materials used, and
- f) the treatment process used on the member.

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CONSERVATION OF THE "A" TOWER

WATTS TOWERS CONSERVATION PROGRAM continued

Cost estimate

On an allocated basis, the conservation of the "A" Tower cost about \$135,000. Estimated costs were: scaffolding \$3,000; baseline photography \$4,000; inspection \$2,000; emergency stabilization \$1,000; and, finally, the design and application of conservation processes or structural conservation \$125,000. This final effort included 3,800 hours of labor by Cultural Affairs staff, 700 hours by contract conservators and an engineer over a 19-month period, and a portion of the previous efforts in selection of materials and the design and documentation of conservation processes. 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.

Structural Conservation (See Figures 1 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. Cleaning and removing rust and grease from steel was done with Duro naval jelly and acetone. 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 better match repair mortar color with the originals and then the surface was covered with Siline for waterproofing. The consolidant used for shells and rocks 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 "A" Tower Conservation" tables in the Appendix.

Large crack filling was accomplished using Portland cement mortar. The local, commercial sand used to mix the cement was a 1:2:3 mix of #12, #16 and #60 to match that originally specified by the State of California.

Major member conservation included replacements of reinforcements in portions of the horizontal bands which were broken and where steel reinforcements were weakened by excessive corrosion; and replacements of reinforcements in portions of the center column and in vertical arcs which were similarly weakened. In the horizontal bands, the 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.

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CONSERVATION OF THE "A" TOWER

Conservation Applications:

Cleaning with water/cotton swabs - 420 tiles; 138 glass; 822 pottery.

Cleaning and consolidation with DF104/B-72 -1,833 shells and 220 rocks.

Cleaning with Brasso - 420 tiles.

Rebonding mortar-to-mortar with Sikadur 23 - 229 places

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 earthquakes.
Scaffolding erected on Gazebo for photography.

October to December - Baseline photographs taken.

December - Microfiche viewer/printer acquired/installed.

1988

January - 6 foot, chainlink security fence erected.

March - Scaffold erected, emergency stabilization started.

April - Start of staff training 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.

May 23 to June 7 - Inspection of "A" Tower.

August - Start cleaning and consolidating sea shells and abalone shells.

September - Inspection of all sculptures completed.
- Emergency stabilization completed.

1990

January to March - Evaluation of conservation materials from test program.

August - Modify sand sieve sizes for cement to match State specification.

continued

CONSERVATION OF THE "A" TOWER
CHRONOLOGY OF WATTS TOWERS CONSERVATION continued

1991

- February - Remove scaffold from Ship of Marco Polo.
- Begin conservation work on Garden Spire.
- March - Begin conservation work at D & E levels of "A" Tower.
- Remove minor vertical arcs.
- May - Replace reinforcements in minor vertical arcs at E level.
- June 28 - 5.8 Sierra Madre earthquake
- Begin conservation work at A & B levels.
- July - X-ray "A" Tower members. Reinforcements in center column
Indeterminate from x-rays.
- August - Replace reinforcements in minor vertical arcs D & C
levels.
- Repair major vertical 04 and base.
- Begin repair of major bands 01 & 02.
- October - Begin to reattach bands to verticals.

1992

- January - Heavy rains/winds.
- February - Center column damage discovered.
- Horizontal band 01 completed.
- Garden Spire scaffold removed.
- April - Review of "A" Tower by GCI & LACMA Representatives.
- Civil unrest & riots.
- May - ¹Counterfeit area discovered on lowest pot of center
column.
- June - Center column reinforcement repair design review.
- July - Replace section of center column steel reinforcing
cylinder.
- Cover column and replace outer ornamented bowl.
- September - Remove scaffold from "A" Tower.
- October - Complete cleaning and consolidation on "A" Tower base.

¹ During an inspection of the "A" Tower on May 13, 1992 it was determined that the covering is counterfeit over the top third of the lowest pot of three around the center column near the base. The suspect covering is a ring of materials (bits of tile, pottery, glass and mortar). Careful inspection and examination of photographs and films from 1946, 1959 and 1961 prove that the suspect area is counterfeit and the other pot coverings are authentic. The counterfeiter placed the mortar and ornaments over what had been shell-covered mortar.

July 31, 1991

TO : FILE- Watts Towers Conservation, Cultural Affairs Dept.
 FROM : Bud Goldstone

SUBJECT: REINFORCEMENTS IN "A" TOWER COLUMNS & JOINTS
 FINDINGS FROM JULY 25, 1991 X-RAYS

- Reference: a) 11/18/89 GOALS OF X-RAY PROGRAM
 b) AFEs with Davis Quality Lab for X-rays
 c) Set of 18 X-Rays 7/25/91
 d) Lotus 1-2-3 File "X-RAYCALC.WK1"

SUMMARY OF RESULTS

Analyses of these x-rays and visual inspection have indicated a need for replacement of inadequate steel reinforcements in the lower two horizontal bands and in the westmost of the four major vertical support columns.

BACKGROUND

The "A" Tower, one of the earliest sculptures built by Rodia and one of the three tallest at the time along with the East Tower and Center Tower, was built before the West Tower, Gazebo, Chimney, Ship spire and Garden spire were completed. Previous x-rays have shown: the sizes and shapes of reinforcements and joints in the Gazebo, East Tower, Center Tower, South Wall posts and in horizontal bands and vertical, arched supports of the Ship and in the Ship main spire base; cracks and voids in the mortar; wire and wire mesh wrappings around the reinforcements and joints; and evidence of rusting in the steel reinforcements. Mortar cracking failures have been evident in the "A" Tower horizontal bands and vertical columns for many years. No significant repairs were done on the vertical supporting columns or horizontal bands since 1978 and there are no reliable records of prior repairs.

RESULTS

In an effort to resolve the cause of the failures and determine the extent of steel and mortar damage, X-rays were taken of all four major vertical columns, the center column and the two lower horizontal bands. A total of 18 x-rays were taken on July 25, 1991 by Davis Quality Laboratory technicians.

X-RAY

No.	Member	Elevation	Condition from x-ray & visual inspection
1	MajV01 N.	3 ft.	Looks o.k., no voids, good 1/2" rebar.
2	MajV01 W.	3 ft.	Looks o.k., rebar joggle, unknown vertical line.
3	MajH01 N	6 ft.	Looks o.k. but no rebar-only mesh with 3" wide pattern.
4	MajV02 W.	3 ft.	Looks o.k., no voids, good rebar.
5	MajV02 S.	3 ft.	Looks o.k., no voids, good rebar.
6	MajV02/H01 E.	6 ft.	NO X-RAY
7	MajV02/H02 E.	8 ft.	1 3/4" wide plate rebar-poor condition in band 02.
8	MajV03 S.	3 ft.	Looks o.k., 1/2" rebar.
9	MajV03 E.	3 ft.	Looks o.k., 1/2" rebar.
10	MajV03/H01 S.	6 ft.	No rebar, only wires in band 01.

continued

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July 31, 1991

X-RAY

No.	Member	Elevation	Condition from x-ray & visual inspection
11	MajV03/H02 S.	8 ft.	1" channel (west of MajV03) & 1/2" rebar (east of MajV03) in band 02, cracks/voids, 1/2" vertical rebar.
12	Maj H01 N.E.	6 ft.	No rebar.
13	Maj H01 S.E.	6 ft.	No rebar
14	Maj H02 N.E.	8 ft.	1" plate rebar in band, condition unknown.
15	Maj H02 S.E.	8 ft.	No rebar seen.
16	Ctr Col W.	5 ft.	8" diameter pipe, condition unknown.
17	Ctr Col W.	8 ft.	8" diameter pipe, condition unknown.
18	Ctr Col W.	15 ft.	3 1/4" o.d. pipe above 5" o.d. pipe below, condition unknown.

7/8/91

LOCATIONS FOR JULY 25, 1991 X-RAYS

"A" Tower

X-RAY

<u>Number</u>	<u>Member</u>		<u>Elevation</u>	<u>Side/Direction</u>
1 & 2	Maj Vert. #1	2 x-rays	3 ft.	north & west side
3	Maj Vert. #1	2 x-rays	6 ft.	Maj H01 north side
4 & 5	Maj Vert. #2	2 x-rays	3 ft.	west & south side
6 & 7	Maj Vert. #2	2 x-rays	6/8 ft.	Maj H01/02 east side
8 & 9	Maj Vert. #3	2 x-rays	3 ft.	south & east side
10 & 11	Maj Vert. #3	2 x-rays	6/8 ft.	Maj H01/02 south side
12	Maj H01	1	6 ft	Northeast
13	Maj H01	1	6 ft.	Southeast
14	Maj H02	1 x-rays	8 ft.	Northeast
15	Maj H02	1	8 ft.	Southeast
16	Center Column	1 x-ray	5 feet	West side under bowl
17	Center Column	1 x-ray	8 feet	West side
18	Center Column	1 x-ray	15 feet	West side

June 30, 1989

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

Reference: a) Computer data file ATCINSP May - June 1989
b) Inspection sheets
c) Microfiche records

The information presented below is based on inspections made

by the inspection staff from May 23, 1989 to June 7, 1989. Information is presented in 5 sections; 1. Rusted/exposed wire, mesh and rebars; 2. Loose parts; 3. Broken/missing major & minor load carrying members; 4. Cracks; and 5. Broken/missing ornaments. The enclosed charts resulted from a computer-generated search of the ATOINSP data base.

SECTION 1. RUSTED/EXPOSED WIRE, MESH AND REBARS

Inspection revealed some exposed, rusted wire, mesh or rebars in 8 of the 17 4' by 4' areas as follows:

TABLE 1
A TOWER RUSTED METAL AREAS

<u>ELEVATION</u> <u>CODE</u>	<u>DIRECTION</u>	<u>ASPECT</u>
C (12')	E	O (OUTSIDE)
C	N	O
C	W	O
D (16')	NW	O
D	SW	O
E (20')	SW	O
E	SE	O

SECTION 2. LOOSE PARTS

See SECTION 5. BROKEN/MISSING ORNAMENTS for graphical computer-generated analyses of A Tower ornamentation. Inspection revealed loose parts in 2 of the 17 4' by 4' areas and the following information:

- loose glass in 2 areas;
- loose mortar in 6 areas.

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

Inspection revealed one (1) broken or missing load-carrying member, minor vertical arc 03.

SECTION 4. CRACKS

Inspection revealed 18 cracks in the 17, 4' by 4' areas. The numbers and depths of the cracks and their distribution throughout the sculpture are shown on Figure 1. A Tower Levels A-E.

Page two of two
 A TOWER INSPECTION RESULTS
 SECTION 4. CRACKS continued

June 27, 1989
 NJG

Six (6) cracks, 33 per cent, of the 18 were greater than 25.4 mm deep, with the deepest measuring 41, 79, and 89 mm deep. The depths of up to 3 cracks (depth1, depth2, depth3) and the number of cracks in the various areas of the sculptures are displayed in Figure 1. A Tower Levels A-E.

SECTION 5. BROKEN/MISSING ORNAMENTS

Inspection revealed broken ornaments in 15 of the 17 4' by 4' areas and missing ornaments in 10 areas. The numbers and types of missing and broken ornaments and their distribution throughout the sculpture are shown in Figures 2. and 3. A Towers Levels A-E.

Summary of Data

	TILES	BROKEN			MISSING			NO. CRACKS	CRACK LENGTH MM	
		GLASS	SHELLS	POTTERY	TILES	GLASS	SHELLS			POTTERY
A Tower	21	51	55	20	0	21	154	33	114	70,000
(south side	0	17	9	8	0	8	0	0	25)	
(north side	2	0	52	1	0	0	5	4	20)	

Photographs

Figure 1. "A" Tower, lower left in front of house. Note 2 lower bands & undecorated spire above house. c1929. Photographer unknown.

Figure 2. "A" Tower, 2nd inset and lower foreground in upper photo. Note decorated rings on spire & 3 lower bands. Jul 1951. J. Reed, Arts & Architecture.

Figure 3. "A" Tower sketch showing differences between 1929 and 1951 configurations.

Figure 4. Steel rebar uncovered near top of spire on "A" Tower. Apr 91. ATO E SE.

Figure 5. Damage to top of major vertical no. 04, top center of photo. Jun 1991. ATO D NW.

Figure 6. Detail of rusted pipe & mesh at band and vertical joint, major vertical 04 & Band 02. Jun 1991. ATO D SW.

Figure 7. Cut & detached mortar and steel showing cracks and rust on major vertical 04. Jun 1991. ATO C W.

Figure 8. Major crack in vertical 04 before removal & replacement of rebar. Jun 1991. ATP C W.

Figure 9. Major crack at Band-to-vertical joint. Jun 1991. ATO C W.

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Photographs (continued).

Figure 10. Major cracks at band-to-vertical joint. Jun 1991. ATO C W.

Figure 11. Ends of Band 01 after severing showing rusted rebars and mesh. Jun 1991. ATO C W.

Figure 12. End of band 02 showing rusted rebar and mesh. Jun 1991. ATO C N.

Figure 13. Band 02 after opening cracks and labeling mortar fragments. Jun 1991. ATO C NW.

Figure 14. Band 02 portion on bench after removal for repair and replacement of reinforcement. Jun 1991. ATO C NW.

Figure 15. Band 02 before repairs. Jun 1991. ATO C NW.

Figure 16. Major vertical 04 before removal of damaged mortar and replacement of steel reinforcement. Jun 1991. ATO B W.

Figure 17. Major vertical 04 base opened for removal of steel rebar and replacement. Jul 1991. ATO A W.

Figure 18. Major vertical 04 wrapped with mesh before covering with mortar. Jul 1991. ATO C W.

Figure 19. Wrap steel pipe with mesh and tie with wire before adding mortar coats. Apr 1991. ATO E SE.

Figure 20. Remove cracked mortar from base to replace reinforcement. Apr 1991. ATO E NW.

Figure 21. Upper spire during repair before rebonding pottery. Mar 1991. ATO E SW.

Figure 22. Rebonding pottery with Jahn M70-18a to upper spire. Apr 1991. ATO E SW.

Figure 23. Tying 4 new rebar channels with wire after wrapping with mesh. Apr 1991. ATO E SW.

Figure 24. Building-out base with Jahn M70-18a mortar. May 1991. ATO E NE.

Figure 25. Adding coats of Jahn M70-18a mortar and rebonding original fragments. May 1991. ATO E SW.

Figure 26. Detail showing mortar build-up to original contour. Jun 1991. ATO SE E.

Figure 27. Detail of joint after mortar covering. Jun 1991. ATO E NW.

Figure 28. Top joint after removal of major vertical 04 for replacement. Jun 1991. ATO D SW.

CONSERVATION OF THE "A" TOWER

Photographs (continued).

Figure 29. Rodia rebar major vertical 02 exposed for cleaning and repair of mortar at Maj Band 01. Dec 1991. ATO B E.

Figure 30. Damaged sheet metal rebar being removed on bench from Maj Band 01. Dec 1991. ATO B N.

Figure 31. Damaged sheet metal rebar detail from Maj Band 01. Dec 1991. ATO B N.

Figure 32. Maj Band 03 after removal. Cracked mortar and rusted steel plate reinforcement. Jan 1992. ATO C E.

Figure 33. Detail of Maj Band 03 rusted steel plate before removal and replacement. Jan 1992. ATO C W.

Figure 34. Damage to center column steel reinforcing outside cylinder and inside pipe. Feb 1992. ATO C W.

Figure 35. Detail of steel cylinder reinforcement damage. Feb 1992. ATO C E

Figure 36. Repair of Maj Band 03 on bench after removal. March 1992. ATO C N.

Figure 37. Attachment of new steel for Maj Band 03 before rebonding of original mortar. March 1992. ATO C N.

Figure 38. Ornaments after cleaning & consolidating with DF-104/B-72. April 1992. ATO D SE.

APPENDIX enclosed after photographs.

- * Watts Towers Materials Tests Report - listing of conservation materials tested and start dates of tests.
- * Watts Towers "A" Tower Conservation - 318 separate treatments; problems found during inspection and the conservation materials and techniques used; locations by direction and by elevation; and photographic baseline reference location.

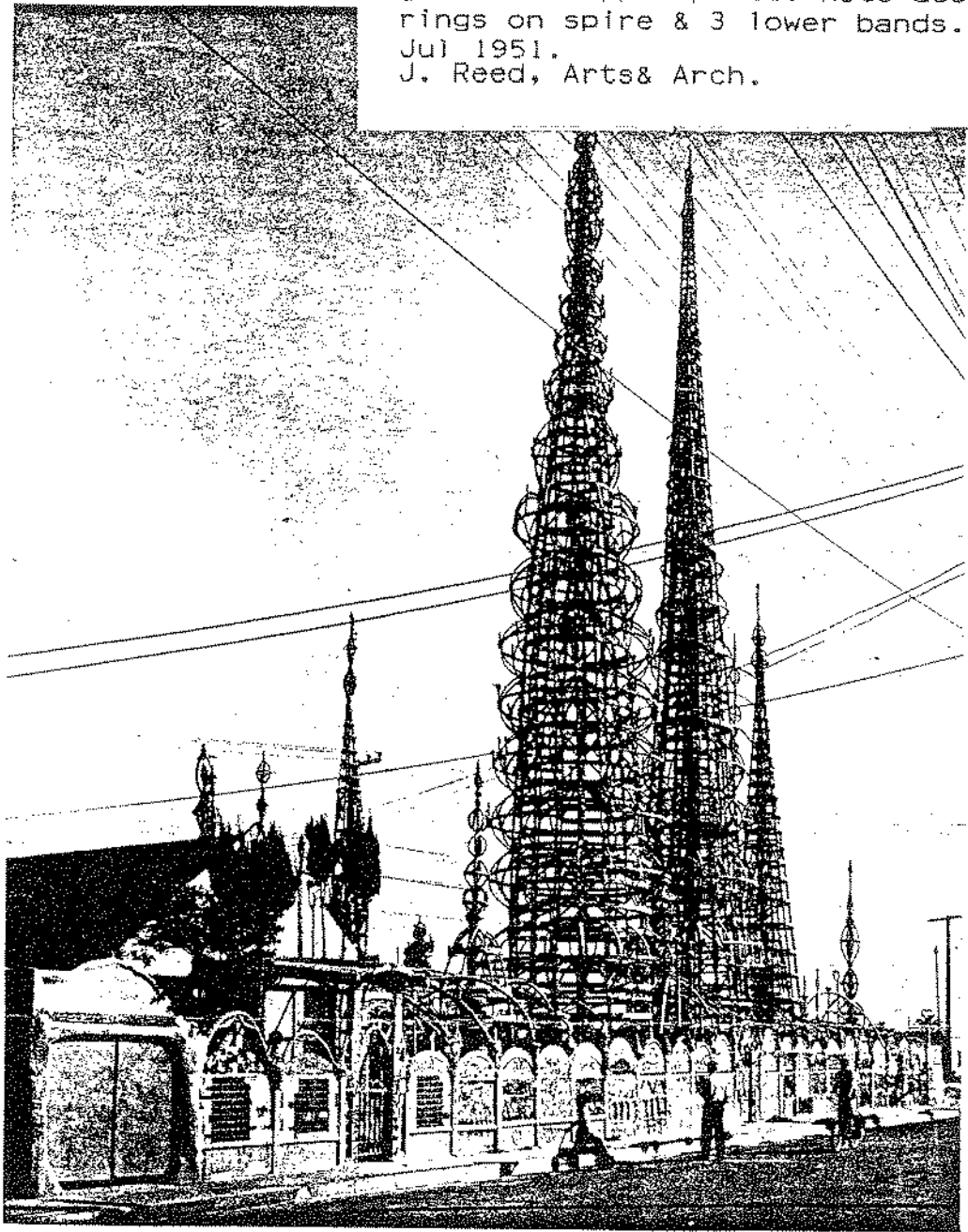
The photo was taken by James Watt
Recuerdo de BRO. SAM. RODIA
Diciembre. 1936 Watts' Calif.

Figure 1: 'A' Tower, lower left in front of house. Note 2 lower abds & undecorated spire above house. c.1936.

Photographer unknown.



Figure 2.
"A" Tower, 2nd inset and lower fore-
ground in upper photo. Note decorated
rings on spire & 3 lower bands.
Jul 1951.
J. Reed, Arts & Arch.



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



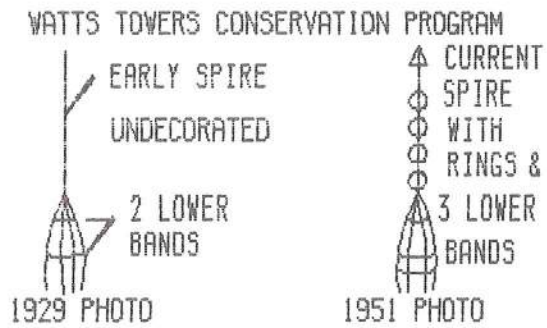


Figure 3.
"A" Tower sketch showing differences
between 1929 and 1951 configurations.



Figure 4.
Steel rebar uncovered near top
of spire on "A" Tower.
Apr 91.
ATO E SE.



Figure 5.
Damage to top of major vertical
no. 04, top center of photo.
Jun 1991.
ATO D NW.



Figure 6.
Detail of rusted pipe & mesh
at band and vertical joint,
major vertical 04 & Band 02.
Jun 1991.
ATO D SW.

Figure 7.
Cut & detached mortar and steel
showing cracks and rust on
major vertical 04.
Jun 1991.
ATO C W.

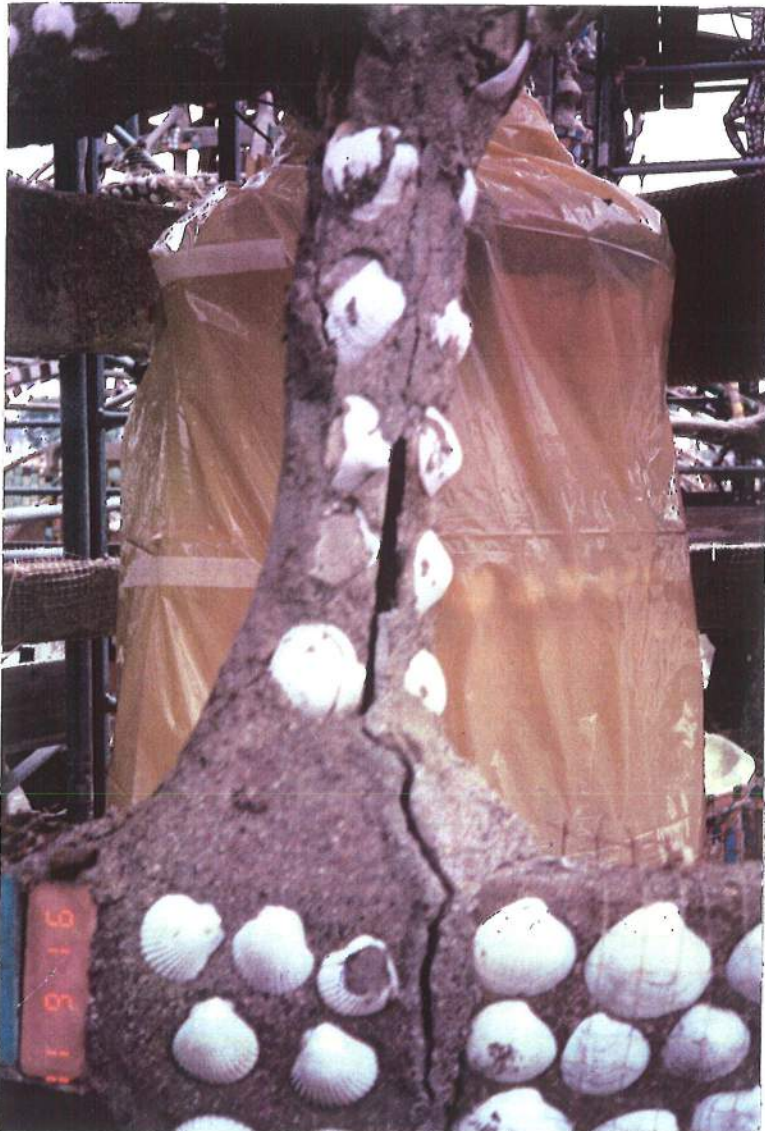


Figure 8.
Major crack in vertical 04
before removal & replacement
of rebar.
Jun 1991.
ATO C W.



Figure 9.
Major crack at Band-to-vertical
joint.
Jun 1991.
ATO C W.

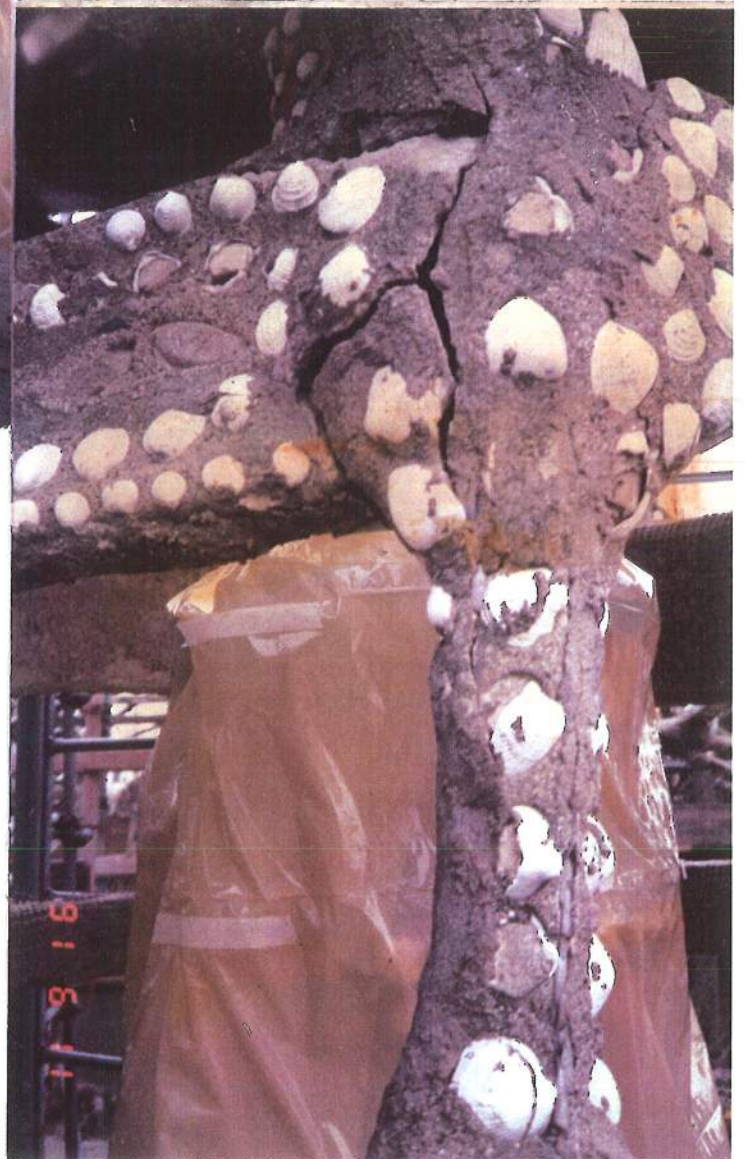


Figure 10.
Major cracks at band-to-vert-
ical joint.
Jun 1991.
ATO C W.

Figure 11.
Ends of Band 01 after severing
showing rusted rebars and mesh.
Jun 1991.
ATO C W.

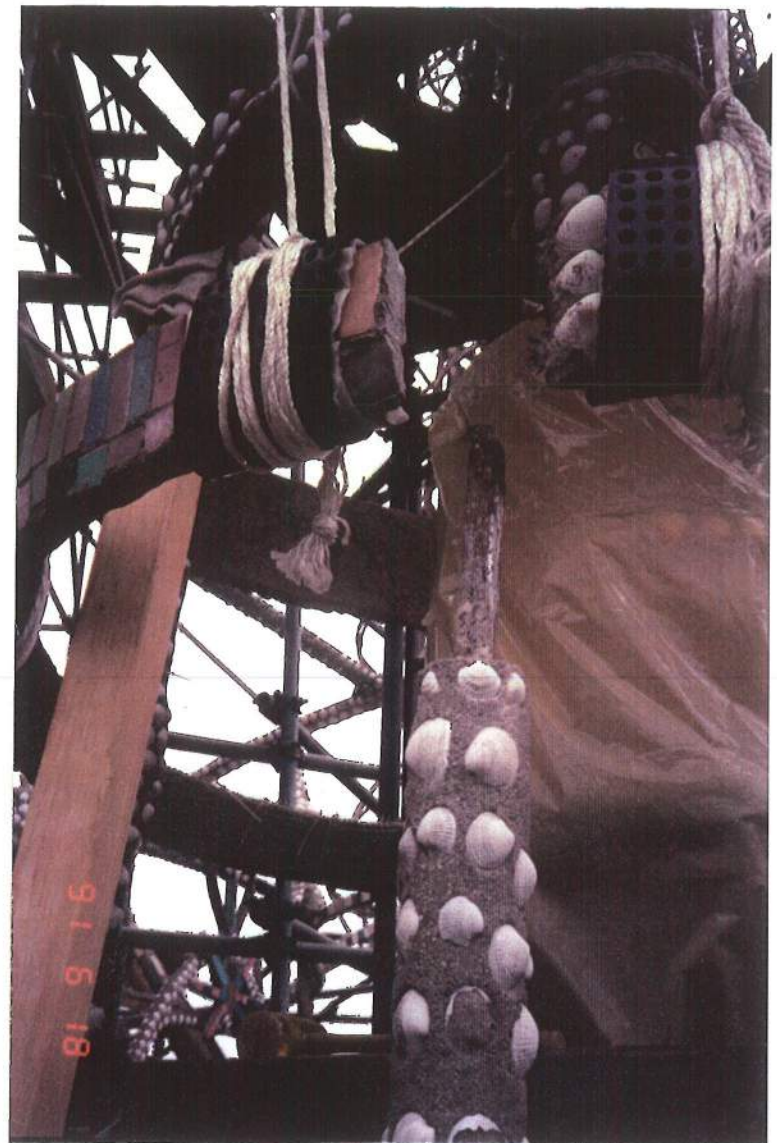


Figure 12.
End of band 02 showing rusted
rebar and mesh.
Jun 1991.
ATO C N.





Figure 13.
Band 02 after opening cracks
and labeling mortar fragments
Jun 1991.
ATO. C NW.



Figure 14.
Band 02 portion on bench after
removal for repair and replace-
ment of reinforcement.
Jun 1991.
ATO C NW.



Figure 15.
Band 02 before repairs.
Jun 1991.
ATO C NW.

91 5 25



Figure 16.
Major vertical 04 before removal
of damaged mortar and replace-
ment of steel reinforcement.
Jun 1991.
ATO B W.

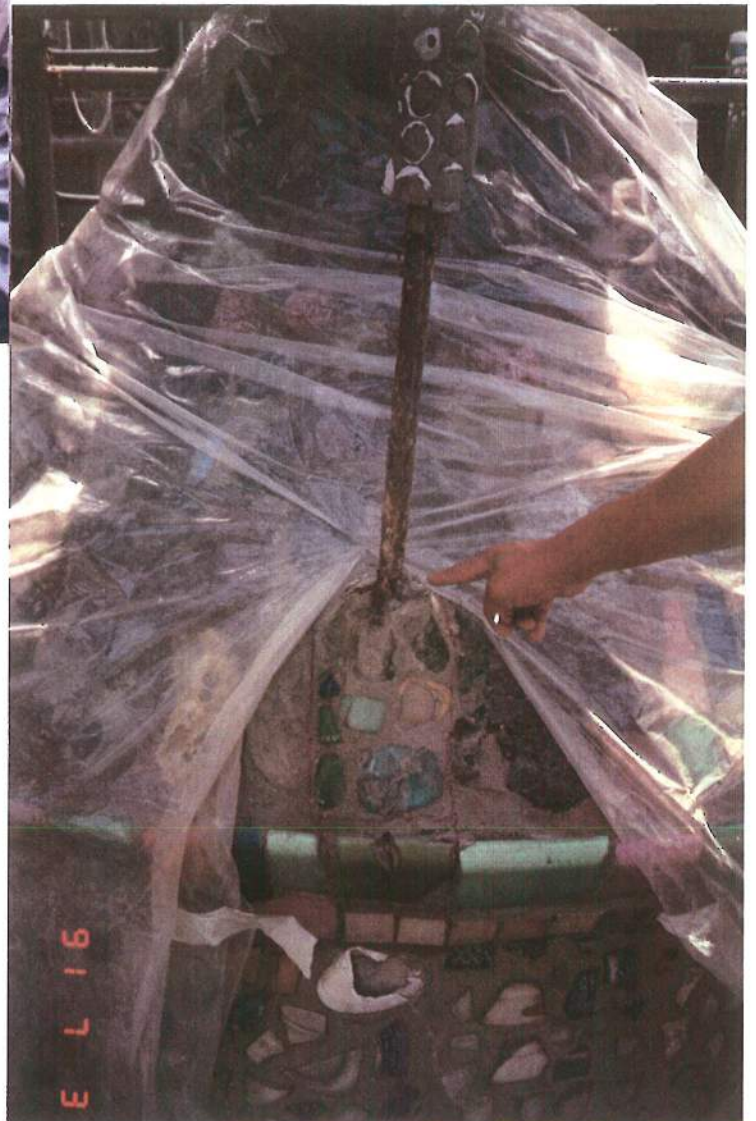


Figure 17.
Major vertical 04 base opened
for removal of steel rebar and
replacement.
Jul 1991.
ATO A W.

Figure 18.
Major vertical 04 wrapped with
mesh before covering with
mortar.
Jul 1991.
ATO C W.

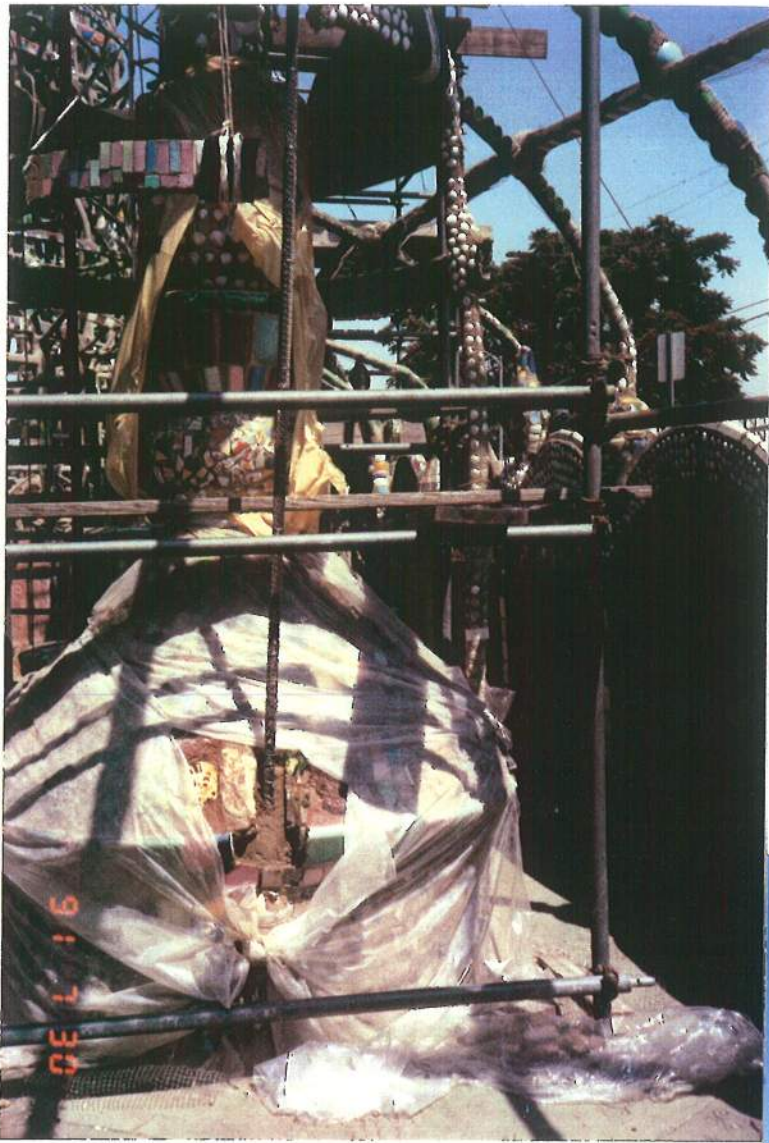


Figure 19.
Wrap steel pipe with mesh
and tie with wire before
adding mortar coats.
Apr 1991.
ATO E SE.

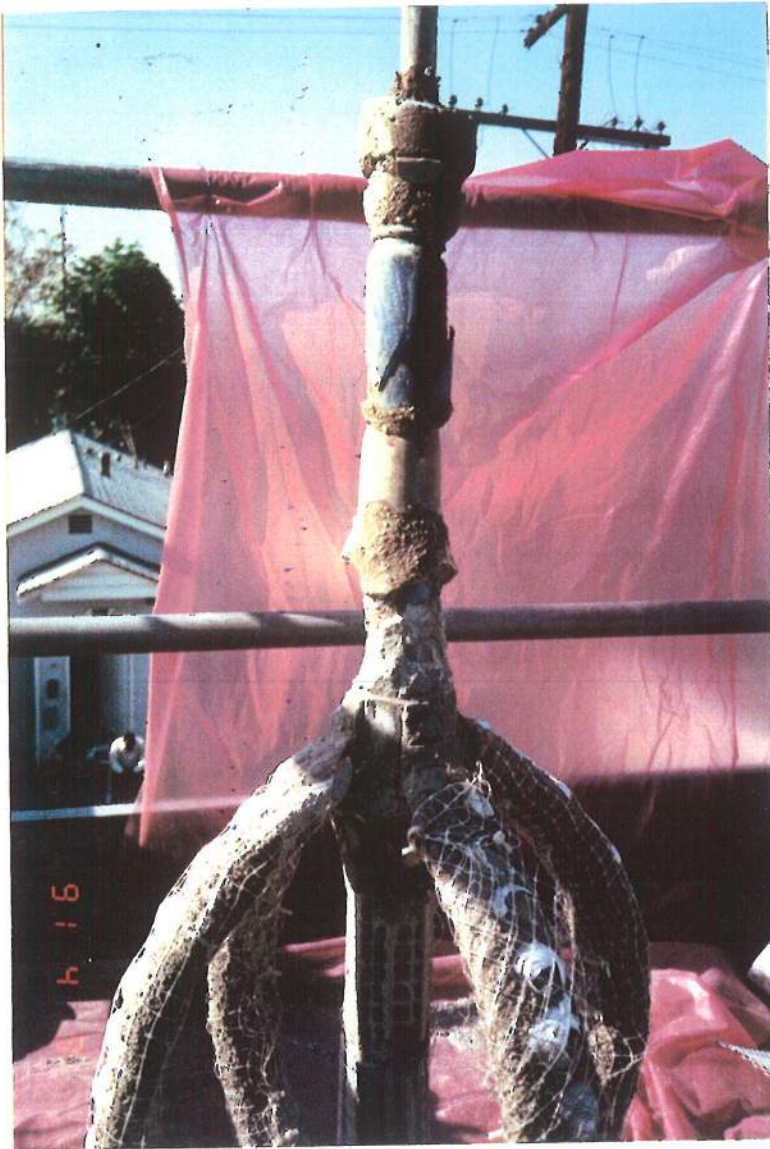


Figure 20.
Remove cracked mortar from
base to replace reinforcement.
Apr 1991.
ATO E NW.

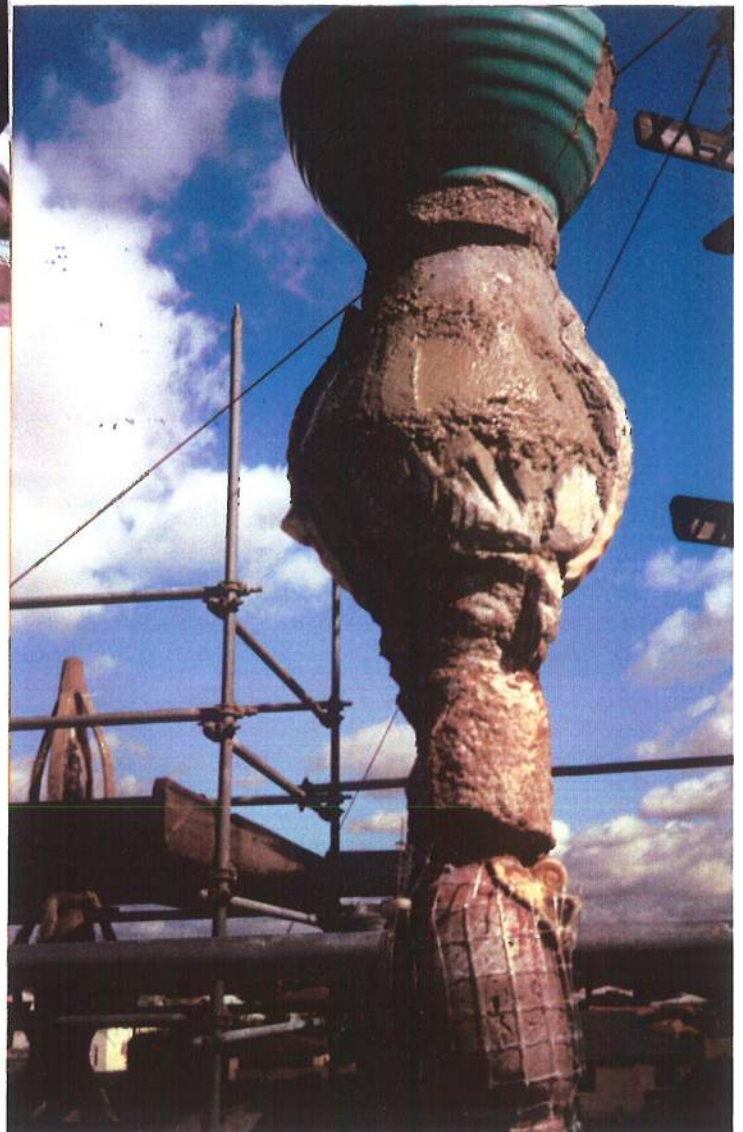


Figure 21.
Upper spire during repair
before rebonding pottery.
Mar 1991.
ATO E SW.

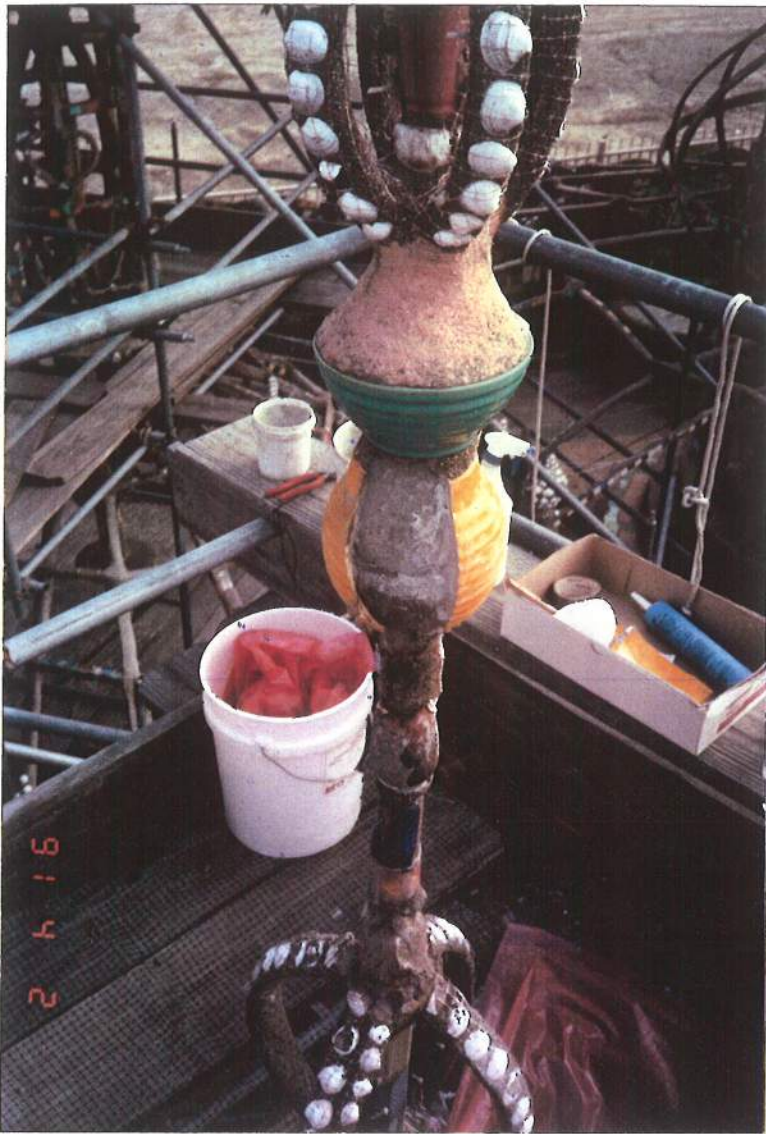


Figure 22.
Rebonding pottery with
Jahn M70-18a to upper
spire.
Apr 1991.
ATO E SW.

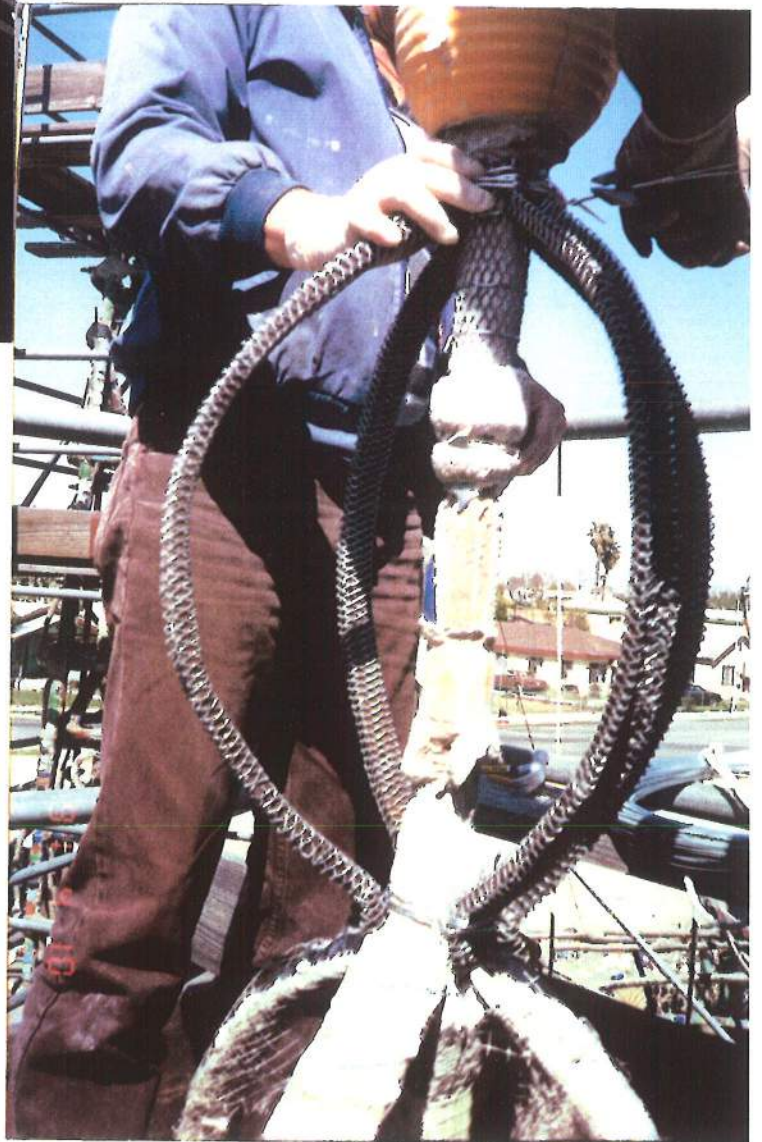


Figure 23.
Tying 4 new rebar channels
with wire after wrapping
with mesh.
Apr 1991.
ATO E SW.

Figure 24.
Building-out base with
Jahn M70-18a mortar.
May 1991.
ATO E NE.

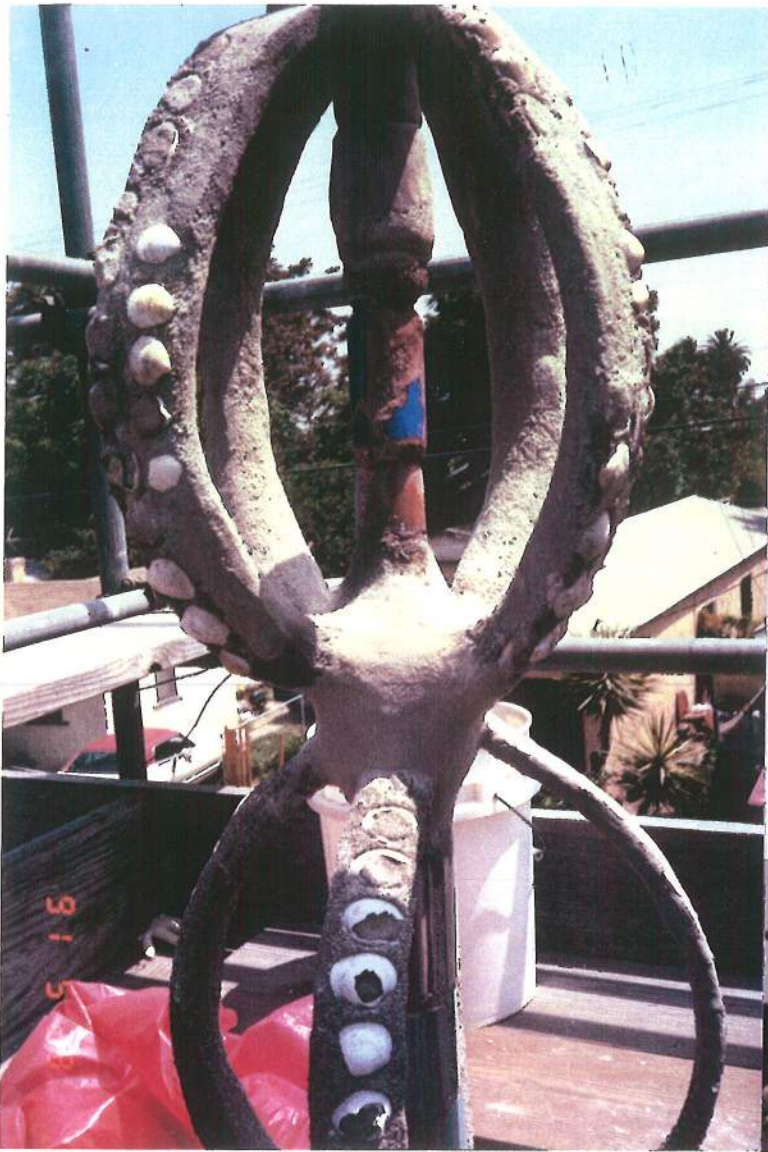


Figure 25.
Adding coats of Jahn
M70-18a mortar and
rebonding original
fragments. May 1991.
ATO E SW.



Figure 26.
Detail showing mortar
build-up to original
contour.
Jun 1991.
ATO SE E.

Figure 27.
Detail of joint after
mortar covering.
Jun 1991.
ATO E NW.





Figure 28.
Top joint after removal
of major vertical 04
for replacement.
Jun 1991.
ATO D SW.



Figure 29.
Rodia rebar major vert-
ical 02 exposed for
cleaning and repair of
mortar at Maj Band 01.
Dec 1991. ATO B E.



Figure 30.
Damaged sheet metal rebar
being removed on bench
from Maj Band 01.
Dec 1991.
ATO B N.

Figure 31.
Damaged sheet metal rebar
detail from Maj Band 01.
Dec 1991.
ATO B N.



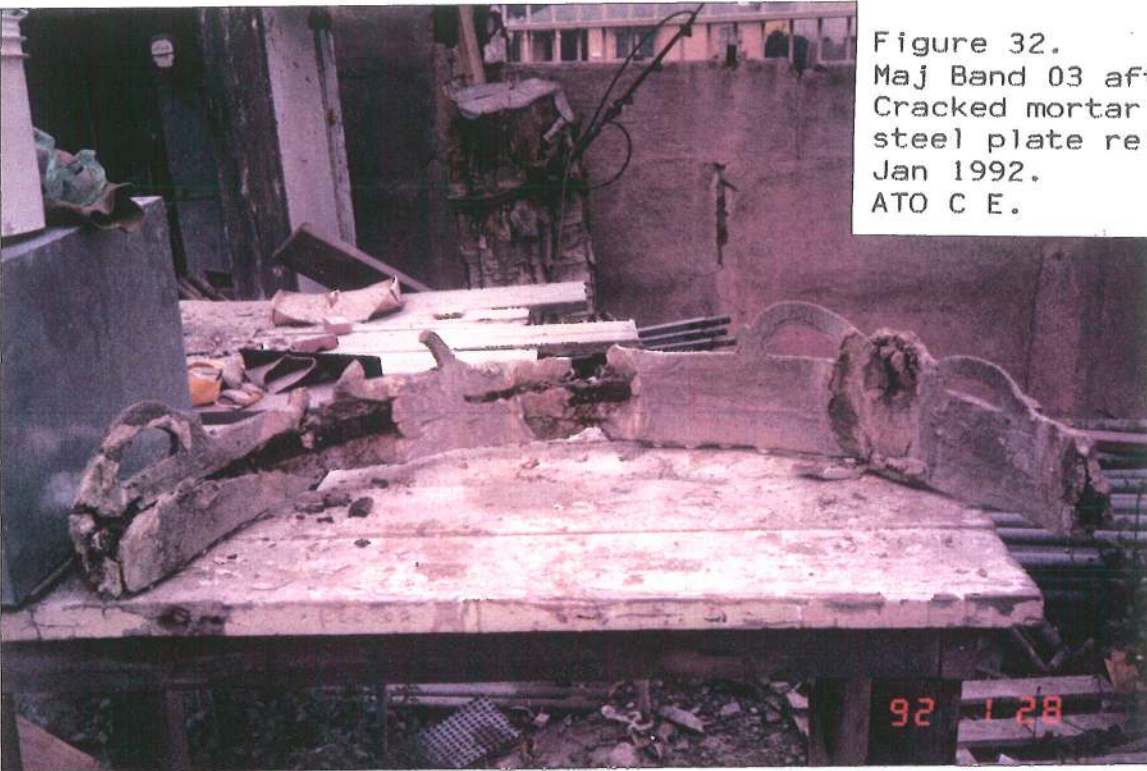


Figure 32.
Maj Band 03 after removal.
Cracked mortar and rusted
steel plate reinforcement.
Jan 1992.
ATO C E.



Figure 33.
Detail of Maj Band 03
rusted steel plate before
removal and replacement.
Jan 1992.
ATO C W.

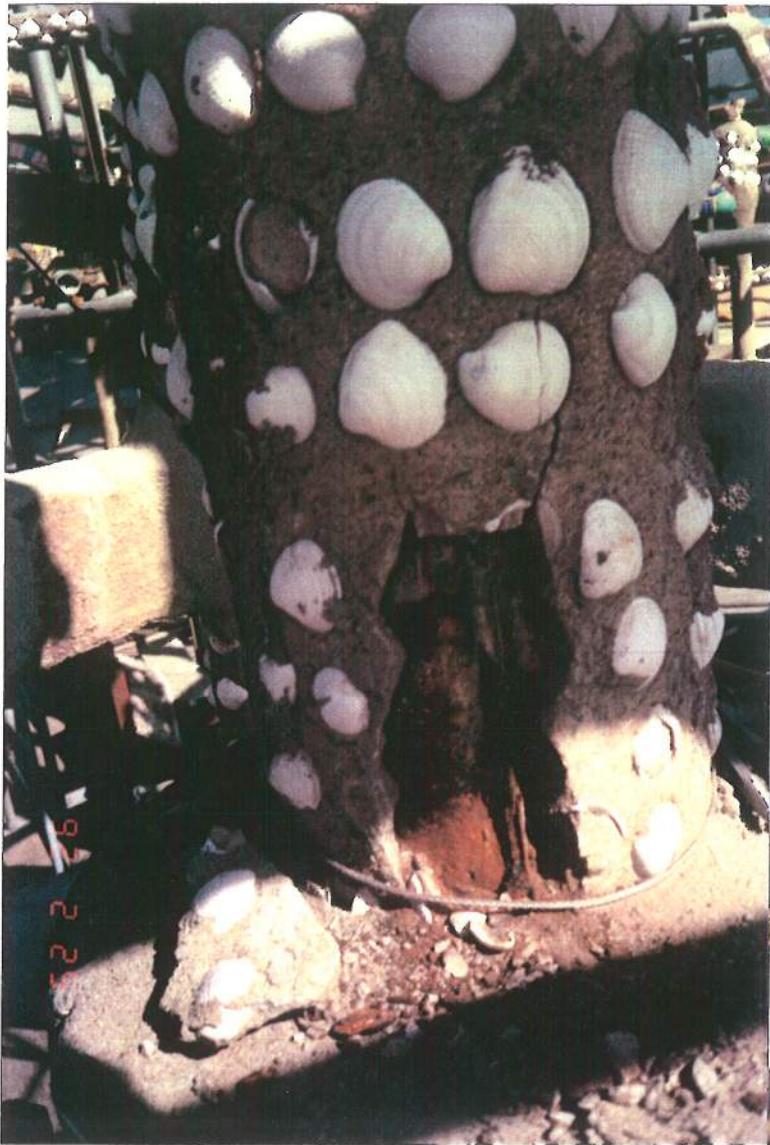


Figure 34.
Damage to center column
steel reinforcing outside
cylinder and inside pipe.
Feb 1992.
ATO C W.



Figure 35.
Detail of steel cylinder
reinforcement damage.
Feb 1992.
ATO C E



Figure 36.
Repair of Maj Band 03 on
bench after removal.
March 1992.
ATO C N.



Figure 37.
Attachment of new steel
for Maj Band 03 before
rebonding of original
mortar.
March 1992. ATO C N.



Figure 38.
Ornaments after clean-
ing & consolidating
with DF-104/B-72.
April 1992.
ATO D SE.

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DATE INITIATED	OPERATION/PROCESS	TOWERS LOCATION	PRODUCT NAME	PRODUCT TYPE
5/04/89	ADHESION/ORNAMENTS	NWA A 17 I F	HYTAL NYL-1 EPOXY ADHESIVE	
7/07/89	CRACK-FILLING	SWA B 15 O	DC 3145 SILICONE	
7/07/89	CRACK-FILLING	SWA A 28 O	DC 3145 SILICONE (PIGMENTED)	
7/07/89	CRACK-FILLING	SWA A 24 O	DC 3145 SILICONE	
10/06/89	CRACK-FILLING	SWA B 15 I	DC 3145 SILICONE	CRACK-FILLER
10/06/89	CRACK-FILLING	SWA A 29 O	DC 3145 SILICONE	CRACK-FILLER
9/26/89	ADHESION/ORNAMENTS	SWA B 15 I	ACRYLOID B-72 IN ACETONE (60%)	CONSOLIDANT
9/26/89	ADHESION/ORNAMENTS	SWA B 15 I	ACRYLOID B-72 IN ACETONE	CONSOLIDANT
7/27/89	ADHESION/ORNAMENTS	CTO A NNN??	ACRYLOID B-72 IN XYLENE 5%	CONSOLIDANT
7/27/89	CONSOLIDATION	SWA B 24 I	ACRYLOID B-72 IN XYLENE 5%	CONSOLIDANT
7/27/89	CONSOLIDATION	SWA B 24 I	ACRYLOID B-72 IN XYLENE 10%	CONSOLIDANT
8/29/89	CONSOLIDATION	SHI C 01 NW	ACRYLOID B-72 IN XYLENE 5%	CONSOLIDANT
8/29/89	CONSOLIDATION 3 SMPL	SHI C 01 SW	ACRYLOID B-72 IN XYLENE 5%	CONSOLIDANT
7/27/89	CONSOLIDATION	NWA A 18 I	ACRYLOID B-72 IN XYLENE 5%	CONSOLIDANT
7/27/89	CONSOLIDATION	CTO A NNN	ACRYLOID B-72 IN XYLENE 5%	CONSOLIDANT
7/27/89	CONSOLIDATION	SWA B 24 I	CHEMTRETE BSM 400	H2O PROOFING AGT
7/27/89	CONSOLIDATION	NWA A 18 I	CHEMTRETE BSM 400	H2O PROOFING AGT
7/27/89	CONSOLIDATION	CTO A NNN	CHEMTRETE BSM 400	H2O PROOFING AGT
8/22/89	CONSOLIDATION	SWA B 24 O	CHEMTRETE BSM 400	H2O PROOFING AGT
8/22/89	WATERPROOFING AGENT	SWA A 12 O	CHEMTRETE BSM 400	H2O PROOFING AGT
8/22/89	WATERPROOFING AGENT	SWA A 11 O	CHEMTRETE BSM 400	H2O PROOFING AGT
7/27/89	CONSOLIDATION	CTO A NNE O	CONSERVARE H PROSOCO	CONSOLIDANT
9/22/89	CONSOLIDATION	CTO A SSE O	CONSERVARE H PROSOCO	CONSOLIDANT
9/22/89	CONSOLIDATION	CTO B SSS O	CONSERVARE H PROSOCO	CONSOLIDANT
7/27/89	CONSOLIDATION	CTO A NNE O	CONSERVARE OH PROSOCO	CONSOLIDANT
9/22/89	CONSOLIDATION	NWA B 17 I	CONSERVARE OH PROSOCO	CONSOLIDANT
8/22/89	CONSOLIDATION	SWA A 10 O	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
7/27/89	CONSOLIDATION	CTO A NNN O	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
9/22/89	CONSOLIDATION	NWA B 17 I	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
9/22/89	CONSOLIDATION REPAIR	CTO B SSW	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
9/22/89	CONSOL/WATERPR AGENT	CTO A SSE O	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
9/22/89	CONSOLIDATION	CTO B NNN O	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
9/22/89	CONSOLIDATION	CTO B NNW O	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
7/27/89	CONSOLIDATION 2 SMPL	SWA B 24 I	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
7/27/89	CONSOLIDATION	NWA A 18 I	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
7/27/89	CONSOLIDATION	CTO A NNN	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF

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7/27/89	CONSOLIDATION	CTO NNW	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SHT A N 0	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SWA A 05 I	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SWA B 24 0	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SHT A N 03	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SWA A 10 0	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SWA A 12 0	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SWA A 12 0	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SHT A N 03	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
8/22/89	CONSOLIDATION	SWA A 12 0	GE DF 104/ACRYLOID B-72 MIX	CONSOLIDANT/H2O PROOF
9/26/89	CRACK-FILLING	SWA B 14 I	GE 167 SILICONE	CRACK-FILLER
9/26/89	CRACK-FILLING	SWA A 14 0	GE 167 SILICONE	CRACK-FILLER
9/26/89	CRACK-FILLING	SWA A 13 0	GE 167 SILICONE	CRACK-FILLER
9/26/89	CRACK-FILLING	SWA A 09 0	GE 167 SILICONE	CRACK-FILLER
9/26/89	CRACK-FILLING	SWA B 16 I	GE 167 SILICONE	CRACK-FILLER
9/26/89	CRACK-FILLING	SWA A 09 0	GE 167 SILICONE	CRACK-FILLER
	CRACK-FILLING		DC 738 W/PIGMENTS/	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA B 07 I	DC 738 W/PIGMENTS/	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA B 07 I	DC 738 W/PIGMENTS/	CRACK-FILLER
	CRACK-FILLING		DC 738 W/PIGMENTS/	CRACK-FILLER
	CRACK-FILLING		DC 738 W/PIGMENTS/	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA A 14 0	DC 738 W/PIGMENTS/	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA A 17 0	DC 738 W/30% SAND,W/PIGMENTS	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA A 13 0	DC 738 W/PIGMENT,30% SAND	CRACK-FILLER
10/06/89	CRACK-FILLING	HOV A 05 0	DC 738 W/SAND & PIGMENTS	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA B 15 I	DC 739 W/PIGMENTS/	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA B 16 0	DC 739 W/PIGMENTS/	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA B 17 0	DC 739 W/PIGMENTS/30% SAND	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA B 16 I	DC 739 W/PIGMENTS	CRACK-FILLER
9/12/89	CRACK-FILLING	SWA B 16 I	DC 739 W/PIGMENTS	CRACK-FILLER
9/12/89	CRACK-FILLING	GAZ A NNW I	DC 739 W/PIGMENTS	CRACK-FILLER
9/01/89	ADHESIVE	SCULPTURE CON	B-48N ADHESIVE HXTAL NYL-1 EPOXY ADHESIVE	
			ABLEBOND EPOXY UV-CURING PRODUCTS	
9/01/89	ADHESIVE/FILL	SCULPTURE CON	DC 737	

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			GE 160 GE 161	
10/24/89	ADHESION	SHI C 01 NW-1	GE 162 TRIMETHOXY SILANE ???	ADHESIVE/ SILICONE
9/01/89	ADHESIVE/FILL	SCULPTURE CON	WESTTECH EPOXY W/MICROBALLROOMS	
9/01/89	FILL MATERIAL	SCULPTURE CON	GE SILPRUF	
10/24/89	DECORATION ADHESION	SHI C 01 NW-1	DC 737	SILICONE ADHESIVE
10/24/89	MORTAR REPLACEMENT	SHI S B 04	SIKATOP 122	MORTAR, COMMERCIAL
2/27/90	CLEANING AGENT	GAZ A WSW 0	BRASSO	METAL POLISH
2/27/90	CLEANING AGENT	GAZ A WSW 0	BRASSO	METAL POLISH
2/27/90	CLEANING AGENT	GAZ A WSW 0	BRASSO	METAL POLISH
2/27/90	CLEANING AGENT/POLIS	GAZ A WSW 0	NOXON	METAL CLEANER
2/27/90	CLEANING AGENT/POLIS	GAZ A WWS 0	NOXON	METAL CLEANER
2/27/90	CLEANING AGENT	GAZ A WWS 0	NOXON	METAL CLEANER
2/27/90	CLEANING POU LTICE	GAZ A WWS 0	MAGNESIUM TRISILICATE	
3/20/90	CRACK-FILLING	PATIO FLOOR	DC-730 SILICONE 50% SAND	CRACK-FILLER
7/03/90	WOOD CONSOLIDANT	CHI A WNW 0	MONSANTO BUTVAR B-90	WOOD CONSOLIDANT
8/06/90	ADHESIVE	SHI C 01 EEF	SIKADUR 31 HI MOD GEL EPOXY	EPOXY
10/02/90	CEMENT-COLOR	WATTS TOWERS	WHITE PORTLAND CEMENT TYPE I	BONDING
10/15/90	CEMENT-COLOR	WATTS TOWERS	GRAY PORTLAND CEMENT TYPE I	BONDING
10/16/90	CEMENT-COLOR	WATTS TOWERS	WHITE/GRAY CEMENT TYPE I MIX	BONDING
11/27/90	CRACK-FILLING	NWA A 09 1	JAHN N30	INJECTION MORTAR
12/05/90	STR. CRACK-FILLING	NWA A 09 1	JAHN N30	INJECTION MORTAR
12/05/90	STR. CRACK-FILLING	CHI B WNW	JAHN N30	INJECTION MORTAR
5/29/91	PIGMENT/SEAL	JAHNN70 SHI B 503	PIGMENTS/SILINE	PIGMENTS/SEALANT
5/29/91	PIGMENT/SEAL	JAHNN70 SHI A 04	PIGMENTS/SILINE	PIGMENTS/SEALANT
5/29/91	PIGMENT/SEAL	JAHNN70 SHI B 5 03	PIGMENTS/SILINE	PIGMENTS/SEALANT
1/22/92	SEAL HOLES IN SHEETS	ATO B SW HORT MD	CAULK (TUB & TILE)	CAULK/SEALER AGAINST

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"A" TOWER CONSERVATION

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ELEV. VIEW CODE DIR.	PROBLEM	DATE	MATERIALS USED	TECHNIQUE USED
A E	STAINED BOWL1, BASE	10/01/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
A E	SAME	10/05/92	BRASSO, ETHANOL, DF104-B-72	CLEAN/CONSOLIDATE ORNAMENTS
A N	LOOSE MORTAR; STAIN ON BOWL1 BASE; CRUNBLING MORTAR	10/02/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
A N	SAME	10/06/92	DIST. WATER, DF104/B-72 CONS.	CLEAN/CONSOLIDATE ROCKS
A W	SPALLS/CRUNBLING MORTAR; STAINED TILE/ROCKS	6/19/91	GRINDER	CUT DAMAGED MORTAR/EXPOSE PIPE
A W	SAME	6/24/91	SIKADUR 23	REBOND MORTAR FRAGMENTS
A W	SAME	7/03/91	GRINDER	CUT MORTAR COVER TO EXAMINE
A W	SAME	7/09/91	GRINDER	CUT MORTAR COVER, REMOVE RUST
A W	SAME	7/16/91	STEEL PLATE, BOLTS, NUTS	PREPARE BASE SUPPORT-NAJVO4
A W	SAME	7/17/91	STEEL PLATE, BOLTS, NUTS	INSERT BASE SUPPORT
A W	SAME	7/22/91	GRINDER	REMOVE RUSTED WIRE FROM FRAGS
A W	SAME	8/05/91	JAHN N70 18A	REBOND TILES
A W	SAME	7/29/91	CONCRETE, MESH, WIRE	TIE, ADD MESH/CONCRETE TO REBAR
A W	SAME	8/06/91	JAHN N70 18A	FILL MAJVO4 BASE, BOND ORNAMENT
A W	SAME	10/01/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
A W	SAME	10/05/92	BRASSO, ETHANOL, DF104/B-72 CONS	CLEAN/CONSOLIDATE ORNAMENTS
B E	STAIN EDGE OF BOWL01; MORTAR SPILL ON SHELL	8/19/91	GRINDER	REMOVE DAMAGED BAND
B E	SAME	1/15/92	SIKADUR 23, WIRE	BOND FRAGS & ORNAMENTS, TIE
B E	SAME	2/03/92	STEEL PLATE, ATTACHMENTS	SHAPE & ATTACH NEW PLATE
B E	SAME	2/26/92	GRINDER	REMOVE DAMAGED FRAGS
B E	SAME	3/24/92	BRASSO, ETHANOL, DIST. WATER	CLEAN ORNAMENTS
B E	SAME	4/14/92	DC738 SILICONE	FILL BREAKS/GAPS AROUND SHELLS
B E	SAME	4/14/92	B-72/DF104 CONSOLIDANT	CONSOLIDATE SEA SHELLS
B E	SAME	4/20/92	B-72/DF104 CONSOLIDANT	CONSOLIDATE SEA SHELLS
B E	SAME	5/26/92	GRINDER	CUT, DETACH FRAGS, RUST
B E	SAME	6/09/92	GRINDER	CUT REMOVE TILE REPAIR MORTAR
B E	SAME	10/01/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
B N	SPALLS/CRUNBLING MORTAR; RUSTED WIRE/MESH; MORTAR SEPARATION	7/17/91	SIKADUR 23	REBOND FRAGMENTS
B N	SAME	8/15/91	3"x1/4"x50" STL PLATE	ATTACH PLATE AS REINF.
B N	SAME	8/19/91	3"x1/4"x50" STL PLATE, TORCH	SHAPE NEW REINFORCEMENT
B N	SAME	8/28/91	GRINDER	CUT/GRIND OUT RUSTED WIRE/MESH
B N	SAME	10/09/91	WIRE, MESH & CEMENT MORTAR	REATTACH FRAGMENT, REBOND
B N	SAME	1/13/92	SIK 23; 1/8x3x60 STEEL PLATE	BOND FRAGS; PREP/ATTACH PLATE
B N	SAME	1/14/92	STEEL PLATE, TOOLS	PREP PLATE FOR WELDING

DATE	MATERIALS USED	TECHNIQUE USED	PHOTOGRAPH CONS ROLL NO.	PHOTOGRAPH CONS SHOT NO.	PHOTOGRAPH SHOT DATE
10/02/92	BRASSO, ETHANOL	CLEAN ORNAMENTS			
10/06/92	DIST. WATER, DF104/B-72 CONS.	CLEAN/CONSOLIDATE ROCKS			
10/05/92	BRASSO, ETHANOL, DF104/B-72	CLEAN/CONSOLIDATE ORNAMENTS			
6/19/91	SIKADUR 23	REBOND MORTAR FRAGMENTS	030C	18-20	6/19/91
7/01/91	GRINDER, SIKADUR 23	THIN FRAGMENTS/REBOND FRAGMENT			
7/03/91	GRINDER/DRILL	REMOVE LOWER ATTACH OF MAJV04	30C;031C	33;18	7/3;7/3/91
7/09/91	DRILL	OPEN BASE FOR INSPECTION	30C,31C	35;33	7/9/91
7/16/91	SIKADUR 23	REBOND MORTAR FRAGMENTS			
7/17/91	CONCRETE MIX	SECURE SAND IN BASE OF MAJV04	31C	23	7/17/91
7/22/91	SIKADUR 23	CLEAN,REBOND MORTAR FRAGMENTS			
7/23/91	SIKADUR 23	REBOND MORTAR FRAGMENTS	031C	30	8/5/91
7/30/91	MESH	ADD MESH AROUND NEW REBAR	031C	25	7/29/91
8/06/91	JAHN N70 18A	REBOND MORTAR FRAGMENTS	031	31;32	8/6;8/6/91
10/02/92	BRASSO, ETHANOL	CLEAN ORNAMENTS			
10/06/92	DIST. WATER & DF104/B-72	CLEAN/CONSOLIDATE ROCKS	048	14	10/6/92
9/18/91	GRINDER	OPEN JOINT TO REBOND	32C	17	8/19/91
1/21/92	ACETONE,SIKADUR 23,WIRE	BOND/JOIN FRAGS & ORNAMENTS			
2/19/92	MESH, WIRE	WRAP MESH AROUND NEW REBAR			
3/18/92	BRASSO,ETHANOL,DIST. WATER	CLEAN TILES	030;	06;	2/26/92
4/01/92	JAHN N90 MORTAR	FILL GAPS	030C	19	3/24/92
4/13/92	DIST. WATER	CLEAN SEA SHELLS			
4/15/92	DIST. WATER	CLEAN SEA SHELLS			
5/19/92	GRINDER	CUT,DETACH MORTAR FRAGS,RUST			
6/02/92	ACETONE, SIKADUR 23	CLEAN, REBOND ORNAMENTS			
9/30/92	BRASSO, ETHANOL	CLEAN ORNAMENTS			
10/07/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			
8/14/91	ACETYLENE TORCH, FORN	SHAPE 3" BY 50" STL PLATE			
8/13/91	GRINDER	CUT,REMOVE RUST/DAMAGED MORTAR			
8/20/91	STEEL MESH	WRAP REBAR PLATE W/MESH			
10/07/91	STEEL BOLTS & NUTS	ATTACH BAND TO VERTICALS			
12/11/91	GRINDER	OPEN/INSPECT MAJH01	035C	1-4	12/11/91
1/14/92	SIKADUR 23, WIRE	BOND ORNMT/FRAGS, TIE TOGETHER			
2/18/92	MESH, WIRE	ATTACH NEW MESH AROUND NEW STL			

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ELEV. VIEW	DIR.	PROBLEM	DATE	MATERIALS USED	TECHNIQUE USED
B	N	SAME	2/20/92	CEMENT MORTAR, CLAMPS	REATTACH COVER TO NEW REBAR
B	N	SAME	5/12/92	GRINDER, CHISEL, HAMMER	DETACH MORTAR IN POT, WIREMESH
B	N	SAME	6/03/92	ACETONE, SIKADUR 23	REBOND ORNAMENTS
B	N	SAME	9/17/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
B	N	SAME	9/30/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
B	W	CRUMBLING MORTAR; STAINED TILE/POTTERY; MORTAR SEPARATION	6/17/91	GRINDER	CUT/DETACH MORTAR
B	W	SAME	7/01/91	GRINDER, SIKADUR 23	THIN FRAGMENTS, REBOND FRAGMENT
B	W	SAME	7/30/91	STEEL MESH	ADD MESH AROUND REBAR
B	W	SAME	8/12/91	GRINDER	CUT/REMOVE RUST/DAMAGED MORTAR
B	W	SAME	8/20/91	STEEL MESH	WRAP NEW PLATE REBAR
B	W	SAME	9/09/91	ACETONE, SIKADUR 23	REBOND MORTAR FRAGMENTS
B	W	SAME	9/11/91	ACETONE, SIKADUR 23	CLEAN, REBOND MORTAR FRAG/SHELL
B	W	SAME	9/17/91	GRINDER	REMOVE RUSTED MESH/WIRE
B	W	SAME	10/07/91	STEEL BOLTS/NUTS	ATTACH BAND TO VERTICALS
B	W	SAME	2/03/92	STEEL PLATE, ATTACHMENTS, MESH	SHAPE PLATE, ADD MESH, REINSTL
B	W	SAME	2/24/92	CEMENT MORTAR, WIRE	REATTACH COVER & LOOSE TILE
B	W	SAME	3/09/92	CEMENT MORTAR, WIRE TIES	REATTACH MORTAR COVERING
B	W	SAME	3/30/92	BRASSO, ETHANOL, DIST. WATER	CLEAN ORNAMENTS
B	W	SAME	4/01/92	JAHN #90	FILL GAPS
B	W	SAME	4/14/92	B-72/DF104 CONSOLIDANT	CONSOLIDATE SHELLS
B	W	SAME	4/20/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
B	W	SAME	5/12/92	GRINDER, CHISEL, HAMMER	CUT/DETACH MORTAR/MESH/WIRE
B	W	SAME	5/28/92	ACETONE, SIKADUR 23	CLEAN, REBOND ORNAMENTS
B	W	SAME	9/29/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
B	W	SAME	10/07/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
C	E	RUSTED MESH; CRUMBLING POTTERY	8/26/91	GRINDER	CUT/EXAMINE BAND 02
C	E	SAME	8/29/91	SIKADUR 23, ACETONE, STL BRUSH	CLEAN, REBOND MORTAR FRAGMENTS
C	E	SAME	4/21/92	DIST. WATER	CLEAN SHELLS
C	E	SAME	5/10/92	YELLOW & BROWN PIGMENT	ADD PIGMENT TO MORTAR ON BANDS
C	E	SAME	6/17/92	SIKADUR 23	REBOND SHELLS & FRAGMENTS
C	E	SAME	7/15/92	TOOLS	WET & EVEN SURFACE FOR STEEL
C	E	SAME	7/21/92	MESH, WIRE	WRAP MESH AROUND STEEL CYLIND.
C	E	SAME	7/28/92	MESH, CEMENT MORT, JAHN #90, WIRE	WRAP MESH, APPLY CEMENT, REBOND
C	E	SAME	8/03/92	GRINDER, JAHN #90	GRIND FRAG, REBOND SHELLS

DATE	MATERIALS USED	TECHNIQUE USED	PHOTOGRAPH CONS ROLL NO.	PHOTOGRAPH CONS SHOT NO.	PHOTOGRAPH SHOT DATE
5/11/92	GRINDER, CHISEL, HAMMER	DETACH MORTAR/ORNAMENTS			
5/27/92	GRINDER	DETACH MORTAR/ORNAMENTS			
6/08/92	GRINDER	CUT/REMOVE TILE REPAIR MORTAR			
9/29/92	BRASSO, ETHANOL	CLEAN ORNAMENTS	045C	22,23	9/22/92
10/07/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			
6/18/91	GRINDER	REMOVE MORTAR FROM PIPE	029;030	37;13	6/17;6/18/91
7/02/91	GRINDER	THIN MORTAR FRAGMENT			
8/12/91	JAHN M70 18A	REBOND MORTAR FRAGMENTS	031	33	8/12/91
8/14/91	3"x1/4"x50" STL, TORCH, FORM	HEAT/SHAPE NEWBAND REBAR PLATE			
9/04/91	GRINDER	CUT/GRIND REMOVE MESH	032	24	9/4/91
9/11/91	GRINDER	REMOVE RUSTED MESH/WIRE			
9/16/91	ACETONE, SIKADUR 23	GRIND/CLEAN/BOND MORTAR FRAGS			
10/07/91	WIRE, CEMENT MORTAR	TIE & REBOND FRAGMENT	33	23-33	10/7/91
12/17/91	SIKADUR 23, ACETONE, WIRE	ATTACH & BOND ORNAMENTS/MORTAR			
2/20/92	CEMENT MORTAR, WIRE	REATTACH, BOND COVER SECTION			
2/26/92	GRINDER	CUT & REMOVE MORTAR FRAG	37;38	31;4,5	2/24;2/26/92
3/25/92	BRASSO, ETHANOL, DIST. WATER	CLEAN ORNAMENTS			
3/31/92	BRASSO, ETHANOL, DIST. WATER	CLEAN ORNAMENTS			
4/13/92	DIST. WATER	CLEAN ORNAMENTS			
4/15/92	DIST. WATER	CLEAN ORNAMENTS			
5/11/92	GRINDER	DETACH MORTAR/ORNAMENTS			
5/18/92	GRINDER	CUT/DETACH FRAGS, RUSTED MESH			
6/08/92	GRINDER	CUT/REMOVE TILES MORTAR REPAIR			
10/01/92	BRASSO & ETHANOL	CLEAN ORNAMENTS			
8/27/91	GRINDER	DERUST/CLEAN OUT BAND INSIDE			
9/23/91	STEEL MESH, WIRE	COVER NEW REBAR W/MESH & TIEUP			
4/27/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			
6/16/92	GRINDER, CHISEL, HAMMER	CUT/REMOVE MORTAR FRAGS	040C	29	5/12/92
7/14/92	JAHN M90	ADD COATS OF MORTAR			
7/20/92	STEEL CYLINDER, 57 BOLTS/NUTS	ADD CYLINDER AROUND COLUMN	041C	22;23	7/15;7/20/92
7/27/92	JAHN M90	REBOND MORTAR FRAGMENTS	042C	1,2;12	7/21;7/27/92
7/29/92	CEMENT MORTAR, JAHN M90	PREP SURFACE, REBOND FRAG, BUILD			
8/04/92	WIRE MESH, CEMENT MORTAR	APPLY TO SURFACE	042C	19 W, 20 E; 30	8/3;8/5/92

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ELEV. VIEW		PROBLEM	DATE	MATERIALS USED	TECHNIQUE USED
CODE	DIR.				
C	E	SAME	8/05/92	CEMENT MORTAR	WET, REBOND ORNAMENTS
C	E	SAME	8/13/92	HAMMER, CHISEL, SPATULA	REMOVE MORTAR WHICH OVERBAND
C	E	SAME	8/20/92	RED, RAW UMBER, FR YL UNB PTGM	APPLY PIGMENTS TO REPAIRS
C	E	SAME	9/09/92	BRASSO, ETHANOL	CLEAN ORNAMENTS
C	NNN	RUSTED WIRE/MESH VERT ARC4; CRUMBLING MORTAR	6/18/91	GRINDER	CUT/DETACH BAND
C	NNN	SAME	6/24/91	GRINDER	CUT/DETACH MAJH 02
C	NNN	SAME	7/02/91	GRINDER	THIN MORTAR FRAGMENTS
C	NNN	SAME	3/03/92	SIKADUR 23	REBOND FRAGMENTS
C	NNN	SAME	3/24/92	MESH, WIRE	PREP & INSTALL NEW MESH, TIE
C	NNN	SAME	6/24/92	GRINDER, CUTTER	CUT & DETACH RUSTED STL/MORTAR
C	NNN	SAME	6/30/92	STEEL MESH, WIRE	ADD MESH, TIE WITH WIRES
C	NNN	SAME	7/06/92	JAHN #90, WATER	ADD 3 COATS OF MORTAR
C	NNN	SAME	7/13/92	JAHN #90, WATER	ADD COATS OF MORTAR
C	NNN	SAME	7/21/92	GRINDER	GRIND FRAGS, REMOVE RUST/MESH
C	NNN	SAME	7/28/92	GRINDER	GRIND FRAGS, REMOVE RUST/MESH
C	NNN	SAME	8/31/92	JAHN #90 MORTAR	OPEN/FILL CRACKS
C	W	CRUMBLING MORTAR; RUSTED WIRE/MESH;	6/11/91	CHISEL/HAMMER	REMOVE MORTAR/EXPOSE RUST
C	W	SAME	6/17/91	GRINDER	CUT/DETACH MORTAR
C	W	SAME	6/24/91	SIKADUR 23	REBOND MORTAR FRAGMENTS
C	W	SAME	7/01/91	SIKADUR 23, GRINDER	GRIND/REBOND FRAGMENTS
C	W	SAME	7/02/91	SIKADUR 23, GRINDER	GRIND/REBOND FRAGMENTS
C	W	SAME	7/03/91	ACETONE, SIKADUR 23	CLEAN, SEAL CRACKS
C	W	SAME	7/30/91	STEEL MESH	ADD MESH AROUND REBAR
C	W	SAME	8/13/91	JAHN #70 18A	REBOND MORTAR & ORNAMENTS
C	W	SAME	8/19/91	JAHN #70 18A	RESHAPE MEMBER SURFACE
C	W	SAME	2/25/92	GRINDER	CUT OPEN, REMOVE OLD REPAIRS
C	W	SAME	4/08/92	JAHN #90 MORTAR	FILL GAPS/CRACKS
C	W	SAME	5/06/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
C	W	SAME	6/22/92	ACETONE, SIKADUR 23	CLEAN, REBOND MORTAR FRAGMENTS
C	W	SAME	7/22/92	JAHN #70	ADD MORTAR COAT, REBOND FRAGS
C	W	SAME	8/13/92	RAW UMBER & RED PIGMENT	APPLY TO MORTAR
C	W	SAME	8/18/92	CEMENT MORTAR	REBOND FRAGS & ORNAMENTS
C	W	SAME	8/24/92	JAHN #90 MORTAR	REBOND ORNAMENTS & FRAGMENTS
C	W	SAME	8/26/92	JAHN #90 MORTAR	CLEAN, REBOND ORNAMENTS
D	NE	MORTAR ABRADED	4/08/92	JAHN #90 MORTAR	COVER MINV01 THRU 04

DATE	MATERIALS USED	TECHNIQUE USED	PHOTOGRAPH CONS ROLL NO.	PHOTOGRAPH CONS SHOT NO.	PHOTOGRAPH SHOT DATE
8/10/92	CEMENT MORTAR	REBOND ORNAMENTS	042C;043c	35;6,7	8/5;8/10/92
8/13/92	RAW UMBER/FR.YELLOW OCHRE PIGM	APPLY TINT TO MORTAR			
9/14/92	RAW UMBER,BLK,FR OCHRE PIGMENT	APPLY PIGMENTS TO JAHN MORTAR	045	24,25	9/22/92
6/18/91	GRINDER	CUT/REMOVE MORTAR	30	14,15;16,17	6/18;6/18/91
7/01/91	GRINDER	THIN MORTAR FRAGMENTS			
8/13/91	ACETONE, SIKADUR 23	CLEAN REBOND FRAGMENTS	032C	07,08	8/13/91
3/17/92	GRINDER	REMOVE FRAGS, INSPECT STEEL			
6/23/92	GRINDER,CUTTER	CUT & REMOVE RUSTED STL/MORTAR			
6/29/92	GRINDER,CUTTER	CUT & REMOVE MORTAR W/TILES			
7/06/92	WIRE,MESH,JAHN #90 MORTAR	TIE ON MESH,ADD JAHN MORTAR#90			
7/07/92	JAHN #90 MORTAR	APPLY COATS OF MORTAR			
7/13/92	MESH & WIRE	WRAP MESH W/WIRE OVER MORTAR			
7/22/92	ACETONE, SIKADUR 23	CLEAN,GRIND,REBOND FRAGMENTS			
8/12/92	CEMENT MORTAR	CLEAN, APPLY FINISH COAT			
6/17/91	GRINDER	CUT/DETACH MORTAR COVERING	29	29,30-31;33-36	6/11;6/17/91
6/19/91	GRINDER	REMOVE DAMAGED PIPE SECTION	30C	21;22	6/17;6/19/91
6/25/91	SIKADUR 23	REBOND MORTAR FRAGMENTS	030C	23-27	6/25/91
7/02/91	GRINDER	THIN FRAGMENTS FOR REBONDING			
7/02/91	GRINDER	THIN FRAGMENT FOR REBONDING			
7/29/91	WELDING TORCH	HEAT/BEND 14' REBAR			
8/12/91	ACETONE, SIKADUR 23	CLEAN & REBOND MORTAR FRAGS	0312;032C	27;10	7/30; 8/14/91
8/14/91	JAHN #70 18A	REBOND MORTAR & ORNAMENTS	32C	09;13	8/14/91
8/19/91	JAHN #70 18A, SIKADUR 23	BOND/REPAIR BROKEN PARTS			
4/06/92	JAHN #90,BRASSO,ETHANOL,WATER	FILL CRACKS,CLEAN ORNAMENTS	37;	32,33;	2/24/92
5/05/92	DIST. WATER	CLEAN SHELS			
6/16/92	GRINDER, CHISEL, HAMMER	CUT/REMOVE MORTAR FRAGS			
7/15/92	JAHN #90	APPLY COAT OF MORTAR	041C	22	7/15/92
8/11/92	CEMENT MORTAR	ATTACH ORNAMENTS			
8/17/92	CEMENT WATER	REBOND ORNAMENTS			
8/19/92	CEMENT MORTAR	REBOND ORNAMENTS	043C	14 TO 17	8/19/92
8/25/92	JAHN #90 MORTAR	APPLY COATS TO REPAIRED AREA			
9/14/92	RAW UMBER,BLK,FRENCH OCHRE PGM	APPLY PIGMENTS TO MORTAR	042C	19, 20	8/26/92
4/21/92	DIST WATER	CLEAN ORNAMENTS			

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D NE	MORTAR ABRADED	4/22/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
D NE	MORTAR ABRADED	4/29/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
D NW	MORTAR DELAM/CRUMBLING; RUSTED MESH; STAINED MORTAR	6/10/91	GRINDER	OPEN CRACKS
D NW	SAME	8/27/91	BRASSO	CLEAN POTTERY
D NW	SAME	4/27/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
D NW	SAME	8/20/92	PIGMENTS-RAW UNB, FR YL OCH, BLK	ADD PIGMENTS TO MORTAR
D SW	MORTAR SPALLS/CRUMBLING/DELAM; RUSTED REBAR, WIRE, MESH; STAINED MORTAR	3/18/91	SIKADUR 23, WATER	BOND MORTAR FRAGS, CLEAN SHELLS
D SW	SAME	6/11/91	GRINDER	EXPOSE REINFORCEMENT BY CRACKS
D SW	SAME	6/24/91	SIKADUR 23, DC 3145	REBOND FRAGS/GLASS
D SW	SAME	7/31/91	CEMENT MORTAR	FILL ARC BASE
D SW	SAME	8/05/91	JAHN #70 18A	GRIND/REBOND MORTAR FRAGMENT
D SW	SAME	7/29/91	CHISEL/HAMMER	OPEN AREA TO REATTACH NEW BAR
D SW	SAME	8/19/91	JAHN #70 18A	REBOND MORTAR FRAGMENTS
D SW	SAME	8/26/91	CEMENT MORTAR	ADD 1/4" COAT, REBOND GLASS
D SW	SAME	4/28/92	SOFT BRUSH	CLEAN SHELLS
D SW	SAME	8/20/92	RAW UNBER, FR YL OCHRE, BLACK	ADD PIGMENT TO MORTAR
D SE	MORTAR ABRADED/CRUMBLING/DELAMINATED	3/30/92	STEEL 1/8X1 1/2X75", 1/4" BOLTS	SHAPE NEW REINFORCEMENT, ATTACH
D SE	MORTAR ABRADED/CRUMBLING/DELAMINATED	4/28/92	DIST WATER	CLEAN SHELLS
D SE	MORTAR ABRADED/CRUMBLING/DELAMINATED	4/29/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
D SE	MORTAR ABRADED/CRUMBLING/DELAMINATED	8/20/92	JAHN #90	CLEAN/FILL CRACKS
E NE	MORTAR SPALLS/CRUMBLING/STAINED/ABRADED/DELAMINATED	3/18/91	GRINDER	DETACH MINV ARC02
E NE	SAME	3/20/91	WATER, JAHN #70-18A W/PIGMENT	CLEAN SHELLS, FILL GAPS
E NE	SAME	4/01/91	GRINDER	DETACH MINV 02, FAB NEW CHANNEL
E NE	SAME	4/10/91	WIRE, HOSE CLAMP	ATTACH NEW 1" CHANNEL
E NE	SAME	4/24/91	GRINDER	OPEN FRAGMENTS TO REBOND
E NE	SAME	5/06/91	CEMENT MORTAR	RESHAPE JUNCTION COL/MINV ARCS
E NE	SAME	9/14/92	SILANE	APPLY SILANE OVER PIGMENTS
E NW	MORTAR DELAM/CRUMBLING; STAINED TILES;	3/18/91	GRINDER	DETACH MINV ARC01, REMOVE FRAGS
E NW	SAME	3/20/91	DIST. WATER, JAHN #70-18A W/PIG	CLEAN SHELLS, FILL GAPS
E NW	SAME	4/01/91	GRINDER	DETACH MINV01, FAB NEW CHANNEL
E NW	SAME	4/08/91	GRINDER	GRIND OPEN COLUMN REBAR
E NW	SAME	4/09/91	GRINDER, SIKADUR 23	GRIND CLEAN, REBOND MORTAR FRAG

DATE	MATERIALS USED	TECHNIQUE USED	PHOTOGRAPH CONS ROLL NO.	PHOTOGRAPH CONS SHOT NO.	PHOTOGRAPH SHOT DATE
4/28/92	DIST WATER	CLEAN ORNAMENTS			
8/20/92	JAHN #90	OPEN & FILL CRACKS	039C	07	4/29/92
6/10/91	JAHN #70 18A	FILL CRACKS IN MORTAR	29	19;20	6/10;6/11/91
3/22/92	DIST WATER	CLEAN SHELLS			
8/20/92	JAHN #90	OPEN, FILL CRACK	039C	08,09	4/29/92
			043C	22,23	8/26/92
3/25/91	SIKADUR 23, WATER	BOND MORTAR FRAGS,CLEAN SHELLS			
6/24/91	SIKADUR 23, DC 3145	REBOND FRAGS & GLASS	29C	21;26,27	6/11/91
7/22/91	DRILL	REMOVE MORTAR	31C	24	7/23/91
7/31/91	SIKADUR 23	DETACH,REBOND MORTAR FRAGS	031C	28	7/31/91
			031C	29;23	8/5;7/23
7/30/91	STEEL MESH	TIE NEW MESH/WIRE TO NEW BAR	031	26	7/29/91
8/20/91	CEMENT MORTAR	BUILD UP COAT OF MORTAR 1/4"	32C	22	8/20/91
3/30/92	STEEL PLATE 1/8X1 1/2X75,BOLTS	SHAPE NEW REINFORCEMENT,ATTACH	032C	23	8/26/91
4/28/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE ORNAMENTS	039C	05	4/29/92
4/28/92	DIST. WATER	CLEAN SHELLS	039C	06	4/29/92
4/29/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			
8/20/92	JAHN #90 MORTAR	OPEN & FILL CRACKS	039C	06	4/29/92
3/19/91	GRINDER,STEEL CHANNEL,BOLT	OPEN CRACK,REATTACH MINV02			
3/25/91	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			
4/08/91	ACETONE,SIKADUR 23	REBOND MORTAR FRAGMENTS	026C	5,7	4/01/91
4/23/91	CEMENT MORTAR	REBOND 2 FRAGMENTS MORTAR	026C;027C	36;07	4/10;4/23/91
4/30/91	CEMENT MORTAR	REBOND FRAGMENT	027	21	4/30/91
5/08/91	GRINDER	REMOVE MORTAR AT RING BASE	027C	23;27	5/6;5/8/91
3/19/91	GRINDER	OPEN,INSPECT CHANNEL REBAR			
3/25/91	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			
4/02/91	GRINDER	OPEN AREA ON CTR COL	026C	6,8;12	4/1;4/2/91
4/08/91	MESH, WIRE	ADD MESH/WIRE TO MINV 01 & 04	026C	30	4/9/91
4/16/91	JAHN #70 18A	REBOND FRAGMENT OF MORTAR	027C	03,04	4/16/91

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E NW	SAME	4/22/91	CEMENT MORTAR	REBOND MORTAR FRAGMENTS
E NW	SAME	5/07/91	CEMENT MORTAR	BUILD UP MORTAR OVER JOINT
E NW	SAME	5/29/91	JAHN #70-18A	BUILD UP MORTAR OVER JOINT
E SW	MORTAR DELAM/CRUMBLING; RUSTED REBAR, WIRE; STAINS ON TILE	3/13/91	GRINDER	DETACH MINV04 ARC
E SW	SAME	3/10/91	CEMENT, MESH, WIRE TIES	CLEAN/FILL & REINF. BROKEN POT
E SW	SAME	3/25/91	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS
E SW	SAME	4/02/91	WATER, JAHN #70-18A	CLEAN, REBOND POTTERY
E SW	SAME	4/09/91	MESH, WIRE, JAHN #70 18A	CLEAN, ADD MESH & MORTAR
E SW	SAME	4/08/91	SIKADUR 23	REBOND MORTAR FRAGMENTS
E SW	SAME	4/10/91	1"BY1/4"BY1/8" CHANNEL, MESH	PUT NEW CHANNEL IN PLACE
E SW	SAME	4/30/91	CEMENT MORTAR	RESHAPE MINV ARC
E SW	SAME	5/14/91	JAHN #70-11 & -18A	FILL CRACKS BETWEEN ORNAMENTS
E SW	SAME	5/14/91	STEEL CHANNEL	CUT/SHAPE REPLACEMENT CHANNEL
E SW	SAME	5/29/91	WATER	CLEAN SHELLS
E SW	SAME	6/04/91	JAHN #70-18A	REBOND FINAL MORTAR FRAGMENT
E SW	SAME	6/05/91	DF104, B-72	APPLY CONSOLIDANT TO SHELLS
E SE	MORTAR DELAM/CRUMBLING; RUSTED REBAR, WIRE, MESH;	3/13/91	GRINDER	DETACH MINV03, REMOVE FRAGS
E SE	SAME	3/20/91	DIST. WATER, JAHN #70-18A W/P1G	CLEAN SHELLS, FILL GAPS
E SE	SAME	3/26/91	JAHN #70-18A	BOND POTTERY TO MORTAR
E SE	SAME	4/08/91	CHANNEL 1/8" BY 1", MESH	PREPARE NEW CHANNEL
E SE	SAME	4/15/91	JAHN #70-18A, WIRE TIES	SECURE TOP OF MINV'S, ADD JAHN
E SE	SAME	4/30/91	CEMENT MORTAR	RESHAPE MINOR ARC
E SE	SAME	5/13/91	GRINDER	REMOVE MORTAR FROM DAMAGED MEN
E SE	SAME	5/20/91	GRINDER, NEW STEEL CHANNEL	PREPARE NEW CHANNEL REINF'MENT
E SE	SAME	5/21/91	GRINDER	DERUST, RESHAPE FRAGMENT
E SE	SAME	5/22/91	HOSE CLAMP, CHANNEL 1BY1/4BY1/8	INSTALL NEW CHANNEL REINFORCMT
E SE	SAME	6/03/91	JAHN #70-18A	REBOND MORTAR FRAGMENTS
E SE	SAME	6/05/91	JAHN #70-18A	REBOND MORTAR FRAGMENTS
E SE	SAME	4/28/92	DIST WATER	CLEAN SHELLS

DATE	MATERIALS USED	TECHNIQUE USED	PHOTOGRAPH CONS ROLL NO.	PHOTOGRAPH CONS SHOT NO.	PHOTOGRAPH SHOT DATE
4/23/91	CEMENT MORTAR	CLEAN, APPLY 1/4" MORTAR	027C	05;06	4/22;4/23/91
5/13/91	GRINDER	REMOVE MORTAR AT RING BASE	027C	24;34	5/7;5/13/91
			029C	6	5/29/91
3/13/91	GRINDER	OPEN, INSPECT, DERUST	025C	33;34	3/13/91
3/20/91	DIST. WATER, JAHN M70-18A/PIG	CLEAN SHELLS/FILL GAPS			
3/26/91	GRINDER	DETACH MINV04, CUT NEW CHANNEL			
4/08/91	SIKADUR 23	REBOND MORTAR FRAGMENTS	026C	9	4/2/91
4/09/91	GRINDER	CLEAN CENTER COL REBAR	026C	31; 32	4/9/91
4/09/91	GRINDER, SIKADUR 23	CLEAN, REBOND MORTAR FRAGMENTS			
4/29/91	CEMENT MORTAR	REBOND FRAGMENTS	026C;027C	35;11	4/10;4/29/91
5/08/91	JAHN M70-11	FILL CRACKS WITH JAHN MORTAR			
5/14/91	JAHN M70-11, ACETONE	CLEAN & FILL CRACKS	027C	35	5/14/91
5/29/91	JAHN M70-18A	REBUILD MORTAR COVER	029C	5	5/29/91
5/29/91	JAHN M70-18A	REBOND/REBUILD MORTAR	029C	9	5/29/91
6/04/91	GRINDER	GRIND MORTAR FRAGMENTS	029C	10	6/5/91
6/05/91	JAHN M70 18A	REBOND MORTAR FRAGMENTS			
3/13/91	GRINDER	OPEN MINV03, DERUST	025C	35	3/13/91
3/25/91	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			
3/27/91	GRINDER	DETACH MINV03, CUT NEW CHANNEL	26C	4	3/26/91
4/10/91	MESH, WIRE, JAHN M70-18A	WRAP CENTER COLUMN	026C	34	4/10/91
4/24/91	CEMENT MORTAR	REBOND FRAGMENTS	027C	1,2;08-10	4/15;4/24/91
5/08/91	JAHN M70-11	FILL CRACKS WITH JAHN MORTAR	027	22	4/30/91
5/20/91	GRINDER	REMOVE MORTAR AT COLUMN/MINV03	027;028C	29;16	5/13;5/20/91
5/21/91	SIKADUR 23	REBOND MORTAR FRAGMENTS			
5/21/91	STEEL CHANNEL/MESH	BEND NEW CHANNEL, ADD MESH	028C	18	5/21/91
5/29/91	SIKADUR 23	REBOND MORTAR FRAGMENTS	029C	1,4	5/22/91
6/03/91	GRINDER	GRIND MORTAR FRAG, REMOVE RUST			
6/10/91	JAHN M70 18A	FINISH COLUMN BASE/RING 03	029C	12	6/10/91
4/29/92	DF104/B-72 CONSOLIDANT	CONSOLIDATE SHELLS			