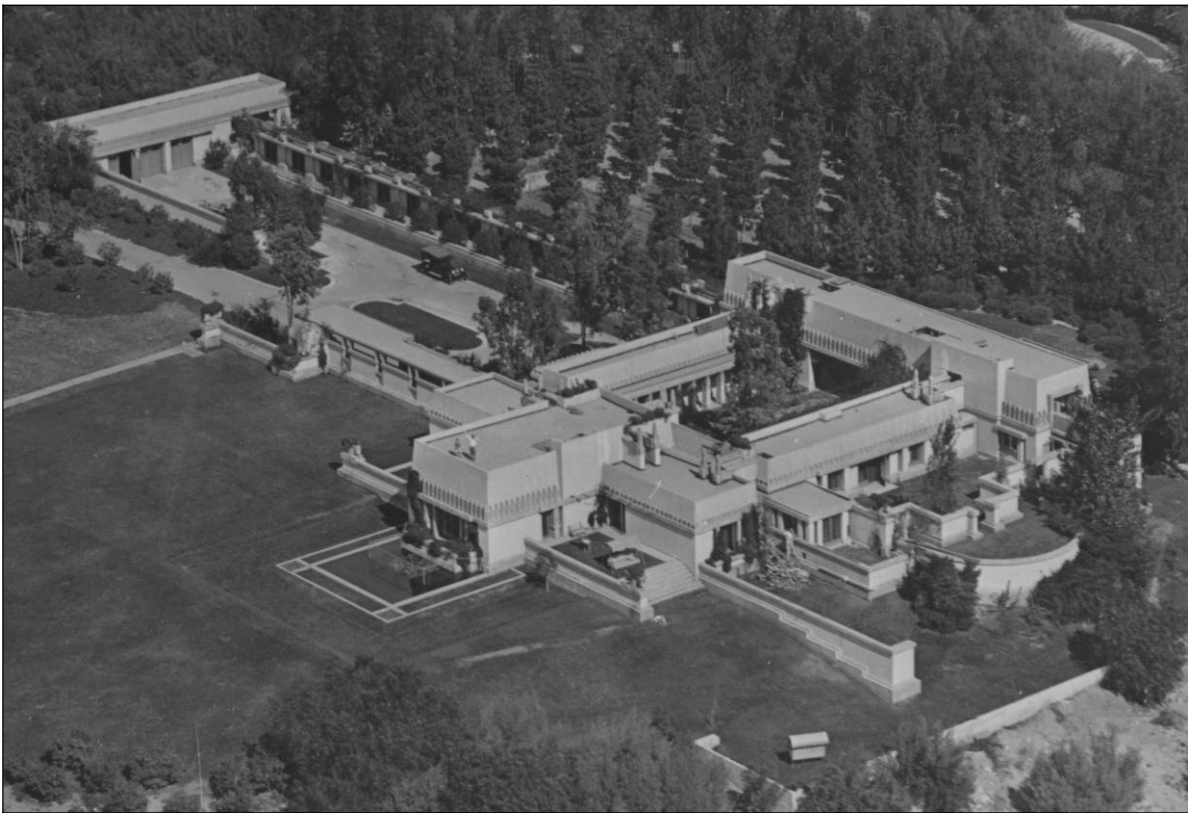


SUPPLEMENTAL HISTORIC STRUCTURE REPORT

HOLLYHOCK HOUSE

CITY OF LOS ANGELES

LOS ANGELES COUNTY, CALIFORNIA



LSA

October 2009

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LSA Project No. CLO0601G

LSA

October 2009

MANAGEMENT SUMMARY

Under contract to Project Restore,, LSA Associates, Inc. (LSA) has prepared this supplemental Historic Structure Report (HSR) for Hollyhock House located within the Aline Barnsdall Complex, one of two extant residential buildings designed on the site by Frank Lloyd Wright for Aline Barnsdall 1919–1921. The purpose of this supplemental HSR is to add new information to the 1992 Hollyhock House HSR prepared by Martin Weil, assess the current condition, and provide treatment recommendations for a focused list of priorities to facilitate Phase III repairs.

Hollyhock House is the centerpiece of the Aline Barnsdall Complex. It is one of two residential buildings (the other is Residence A) that today represent Frank Lloyd Wright’s first commission in Los Angeles during the time that he called his “Romanza Period,” a transition away from his “Oak Park” period that created the Prairie and Usonian styles. Wright’s use of pre-Columbian-inspired monumentality and styling in Hollyhock House led to the creation of other landmark “textile-block” homes in Los Angeles, including the Ennis, Storer, and Freeman Houses. Hollyhock House serves as a significant benchmark in California residential design, largely through Wright’s intricate harmonizing between indoor and outdoor living in the design of its physical layout and significant spaces. In addition to representing a transition in Wright’s personal career, Hollyhock House and the Aline Barnsdall Complex represent the introduction of three architects working under Wright who became masters of California modern architecture in their own right: Rudolph Schindler, Richard Neutra, and Lloyd Wright.

In 2007, the Aline Barnsdall Complex was designated a National Historic Landmark under Criterion C for its architecture. The period of significance cited in the nomination was 1921–1927. Other contributing elements in the complex include Residence A, Hollyhock House Garage, Schindler Terrace, Pet Pergola, and Spring House and Streambed. Barnsdall Park is also listed in the National Register of Historic Places (National Register) under Criterion C for architecture. No period of significance was stated under the 1971 nomination. Lastly, Hollyhock House was designated Los Angeles Historic Cultural Monument (HCM) No. 12 in 1963.

Hollyhock House sustained damage in the 1994 Northridge Earthquake, prompting a \$5 million Phase I stabilization project. Phase I, which was completed in 2003, included connecting the hollow clay tile walls to the roof with internal steel anchors and re-attaching the art stone to the roof with steel pins. Phase II commenced in 2004 and included refurbishing the interior, replacing corroded piping, repairing roof leaks, and removing damaged materials caused by mold, wood rot, and termites. In 2008, Project Restore received a \$1.935 million grant from the California Cultural and Historical Endowment for a Phase III restoration, and the City of Los Angeles provided \$1.935 million in matching funds.

The focused list of preservation issues to be addressed in Phase III includes addressing structural cracking and buckling in the living room fireplace, the porch roof, library, and gallery; water infiltration in the dining room, porch roof, Child’s Room, and gallery; and associated conservation issues with adjacent art stone and the fireplace, and repair of the round and square fountains. In addition to this focused list, the supplemental HSR addresses temporary improvements proposed for Hollyhock House Garage for use as a construction office. Several specialists, including Structural Engineer Melvyn Green, Conservator Charles Kibby, Materials Tester Smith-Emery Laboratories, Waterproofing Experts Independent Roofing Consultants, and Fountain Consultant International Waterscapes examined the residence and provided treatment recommendations for items on the focused list.

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INTRODUCTION

Statement of Purpose

Under contract to Project Restore, LSA Associates, Inc. (LSA) has prepared this supplemental Historic Structure Report (HSR) for Hollyhock House located in the Aline Barnsdall Complex, one of two extant residential buildings designed on the site by Frank Lloyd Wright for Aline Barnsdall 1919–1921. The purpose of this HSR is to add new information to the 1992 Hollyhock House HSR prepared by Martin Weil, assess the current condition, and provide treatment recommendations for a focused list of priorities to facilitate Phase III repairs.

Project Team

This project was completed by a team of consultants led by LSA, with the assistance of various City of Los Angeles departments, as listed below.

- **LSA**
 - Curt Duke, Project Manager/Principal
 - Tanya Sorrell, Architectural Historian
 - Michael Hibma, Architectural Historian
- **Chattel Architecture, Planning, and Preservation**
 - Robert Chattel, Historic Architect/Architectural Historian
 - Gabrielle Harlan, Architectural Historian
 - Justin Greving, Research Associate
- **Melvyn Green and Associates**
 - Mel Green, Structural Engineer
- **CK Arts, Inc.**
 - Charles Kibby, Conservator
- **Independent Roofing Consultants**
 - Mike Wiley, Principal
 - Chris Woolfolk
- **Smith-Emery Laboratories**
 - Jim Ordonez
- **Addison Pools**
 - Drake Woods
- **Cumming Corporation**
 - Philip Mathur

- **Project Restore**
 - Kevin Jew
- **City of Los Angeles Department of Public Works, Bureau of Engineering**
 - Jim Doty, Environmental Division
 - Hsiao-Ling Ting, Project Manager
 - Kevin Payne, Architectural Division
- **Department of Cultural Affairs**
 - Jeffrey Herr, Hollyhock House Curator
 - Virginia Kazor, Historic Site Curator

Investigation History and Methodology

Throughout its history, Hollyhock House has been included in several studies, evaluations, restoration efforts, and planning documents. Its very creation was part of an extensive master plan imagined by Aline Barnsdall to contain business, residential, and theater zones. Her plan was never fully implemented. In 1957–1959, Frank Lloyd Wright designed a new master plan for Barnsdall Park that was never executed. Less than a decade later, the City of Los Angeles Department of Recreation and Parks hired Kahn, Farrell, and Associates to create another master plan containing six new buildings, only one of which was constructed, in 1967. In 1965, Architects Raymond Girvigian and Robert Winter prepared Historic American Buildings Survey (HABS) documentation and a structural analysis, and Barnsdall Park won designation as a Los Angeles Historic Cultural Monument. In 1971, Hollyhock House and the Residence A were placed together in the National Register of Historic Places (National Register).¹ In 1974, the Department of Public Works worked with Lloyd and Eric Wright to repair and renovate Hollyhock House. Since the 1950s, Barnsdall Park has received nearly continuous attention from architects and City officials with dreams of crafting a vibrant and expansive public park dedicated to the arts.

In 1984, Mayor Tom Bradley launched a new effort to restore the park with the creation of the Barnsdall Park Task Force. This task force identified several critical areas in which to improve the park, including landscape, restoration of the historic structures, circulation and parking, security, signage, and financial development.² In 1988 and 1989, Archiplan/Martin Weil prepared three major studies on the park:

- *Barnsdall Park, a Survey and Analysis of F.L. Wright Structures*, 1988.
- *Barnsdall Park Restoration and Maintenance Program Manual*, 1989.
- *Hollyhock House Garage Historic Structures Report*, Archiplan/Martin Weil, 1989.

Weil prepared the first HSR for Hollyhock House in 1992, which included a developmental history, existing conditions assessment, and treatment recommendations.

¹ *Barnsdall Park Historic Site Survey*, 1995.

² *Barnsdall Park Historic Site Survey*, 1995.

In 1992, the Metropolitan Transit Authority (MTA) moved forward with its plan to use Barnsdall Park's Hollywood Boulevard frontage as a staging area for construction of the Metro Red Line and funded additional studies for the park. The mitigation proposed by MTA for demolishing the park's primary entrance afforded the City the opportunity to redesign the entrance within the context of a new master plan. Two reports were completed concurrently:

- *Barnsdall Park Historic Site Survey*, Levin and Associates, with contributions from Kathryn Smith and Martin Weil, 1995.
- *Barnsdall Park Master Plan*, prepared by Peter Walker William Johnson and Partners, with contributions from Lehrer Architects, Levin and Associates, and Kosmont Associates, 1995.

In January 1994, the Northridge Earthquake struck Los Angeles less than 20 miles away from Barnsdall Park. The Federal Emergency Management Agency (FEMA) funded Phase I emergency stabilization of Hollyhock House and Residence A from 2000–2005. Hollyhock House reopened in 2005 for tours. In 2007, the Aline Barnsdall Complex became a National Historic Landmark.

This supplemental HSR will build from Weil's extensive 1992 Hollyhock HSR, providing information related to important events that occurred after the initial HSR. It will also supplement the original HSR developmental history with new research and archival information about the residence. The current condition of selected areas of the house will be assessed and focused treatment recommendations will be made in order to complete Phase III.

DEVELOPMENTAL HISTORY

Statement of Historic Significance

Hollyhock House is the primary building within the Aline Barnsdall Complex. It is one of two extant buildings on the site (the other is Residence A) that represent the early Los Angeles work of the firm of Frank Lloyd Wright. Hollyhock House was Wright's first commission in Los Angeles.

Other contributing elements to the complex include Residence A (also known as the Director's House), Hollyhock House Garage, the Schindler Terrace, Pet Pergola, and Spring House and Streambed, all of which the nomination stated are "nationally significant as physical records of Wright and Barnsdall's singular vision for Olive Hill."³

Though the Master Plan for Olive Hill was realized only in part, Hollyhock House remains a landmark of early modern architecture in southern California.⁴ Architecturally, the house reflects Wright's focus on a newer approach to the massing of buildings, which he termed his "Romanza Period." This new approach was suggestive of the pre-Columbian ruins, then newly discovered in Central America, and was one that Wright employed in the design for Hollyhock House. The solidity of the building with walls that appear very thick recalls the stone temple architecture of the Mayans,

³ *Barnsdall Park Historic Site Survey*, 1995.

⁴ The original 1919 Olive Hill general plan included a theater, a personal residence for Aline Barnsdall, a Director's Residence, and an apartment house for actors. The plan was modified several times between 1919 and 1959, and several permutations are documented.

while the manner in which the cast decorative art stone is employed around door and window openings imbues the building with a ritual formality.

The statement of significance from the National Historic Landmark Nomination for The Aline Barnsdall Complex summarizes the highest significance of Hollyhock House within the context of Barnsdall and Wright's grandiose plans for Olive Hill. It is excerpted below:

The Aline Barnsdall Residence (or "Hollyhock House") and associated buildings and structures are nationally significant as part of Frank Lloyd Wright's remarkable first commission in Los Angeles, California. The project's centerpiece was oil heiress Aline Barnsdall's sprawling residence, largely built between 1919 and 1921. The ponderous visual character of Hollyhock House overtly expressed Wright's transition away from the dwellings of Wright's "First Mature" or "Oak Park" period (1900–12), yet it was the building's more understated elements that had impact on later residential design. Hollyhock House was a high-profile benchmark in the evolution of American domestic space planning: for which Wright adopted and synthesized certain characteristics that became strongly associated with California houses, most particularly the intimate links between indoor and outdoor living. As such, the Aline Barnsdall House stands as a watershed moment in the continuum of Wright's work and was one of a group of sixteen Wright buildings singled out in 1959 by the American Institute of Architects and the National Trust for Historic Preservation as his most important "to the nation ... which ought to be preserved in their original form." The house retains a high degree of physical integrity because of careful stewardship that has responded to challenges ranging from daily use and visitation to earthquake damage. With Hollyhock House as the focus, Wright and Barnsdall's scheme for developing the Olive Hill tract included an array of auxiliary buildings and structures of complimentary design. Only a handful were realized before the venture began to unravel including: the Garage Chauffeur's Quarters, Animal Cages, Residence A, the Spring House and dry streambed, and the Schindler Terrace. These extant buildings and structures are nationally significant as physical records of Wright and Barnsdall's singular vision for Olive Hill, and although presently in various states of preservation, all retain key physical features that demonstrate both individual importance and group cohesion. Similarly, the overall landscape of Barnsdall Park maintains fundamental and character-defining attributes—such as important vistas—present when Aline Barnsdall gifted the property to Los Angeles in 1927.⁵

Historic Designations

Although not a historic designation, Hollyhock House was called out as one of sixteen Wright-designed buildings recognized by the American Institute of Architects and the National Trust for Historic Preservation in 1959 for its invaluable contribution to American culture.⁶ The house was not yet 40 years old at the time.

⁵ Herr, Jeffrey. National Historic Landmark Nomination for the Aline Barnsdall Complex, 2007. On File, Hollyhock House Archives.

⁶ Ibid.

Recognizing the historic significance, the City of Los Angeles Cultural Heritage Commission designated Hollyhock House as Historic Cultural Monument No. 12 on January 4, 1963.⁷

Hollyhock House was added to the National Register of Historic Places as a contributing structure within Barnsdall Park, May 6, 1971.⁸

The Aline Barnsdall Complex became a National Historic Landmark (NHL) on March 29, 2007. The nomination was based upon architectural significance from 1919 to 1927 and National Register Criterion C as an important example of the work of world-renowned master architect Frank Lloyd Wright. Hollyhock House is the centerpiece of the Aline Barnsdall Complex.

Historical Overview

A detailed overview of Barnsdall Park was created for Hollyhock House Historic Structures Report and the 1995 Barnsdall Park Historic Site Survey. Jeffrey Herr's 2007 NHL nomination contains an up-to-date statement of historical significance that includes information about Hollyhock House. Some of that information is excerpted here in order to orient the reader and provide context for new information that has surfaced since 1992.

History of Barnsdall Park. Around 1915, Louisa Aline Barnsdall [1882–1946], the daughter of oil tycoon Theodore N. Barnsdall, met architect Frank Lloyd Wright in Chicago. Aline Barnsdall, who was well-educated and passionate about a broad range of issues, became interested in the experimental theatre movement that was then developing as part of the Chicago Renaissance. Barnsdall wanted Wright to design an innovative theater capable of fulfilling her production needs.⁹ At that time, Wright was focused on the newly acquired commission for the Imperial Hotel in Japan and Barnsdall was involved with small avant-garde theater productions. Both individuals were traveling extensively but maintained communication.

Between 1915 and 1919, Barnsdall's ideals and motivations changed from an innovative theater in Chicago to a theater complex in Los Angeles, which had finally grown large and sophisticated enough to support arts and culture. After the death of her father in 1917 and the birth of her daughter the same year, Barnsdall focused on settling her father's estate and providing a home for herself and her young child in Los Angeles.

On June 23, 1919, Barnsdall purchased Olive Hill, as it was locally known, a prominent 36-acre property with an olive grove in the developing Hollywood area of Los Angeles. This gave Wright a palette on which to develop his ideas and in July he produced a general plan for Olive Hill. The plan included a theater along the eastern slope, a large residential building set prominently at the crest of the hill, a director's residence, and an apartment building, called the "Actor's Abode."¹⁰ Wright drew

⁷ City of Los Angeles Office of Historic Resources. *Historic Cultural Monuments Listing*, updated 4/01/2009.

⁸ National Register of Historic Places Inventory, Nomination Form for Barnsdall Park, 4800 Hollywood Boulevard, Los Angeles, California. On File, Office of Historic Resources, June 2008.

⁹ Herr, Jeffrey. *Aline Barnsdall's Olive Hill Project*, City of Los Angeles Department of Cultural Affairs, Municipal Art Gallery, 2005, p. 7–8.

¹⁰ Smith, Kathryn. *Frank Lloyd Wright, Hollyhock House and Olive Hill*, Rizzoli International Publications, New York, NY, 1992, p. 53.

the first general plan for Olive Hill in 1919, which included Barnsdall's residence, a director's residence, guest house, theater, and apartment building. On Barnsdall's direction, Wright revised the plans in 1920, making the residences the first part of a phased approach, with the theater and apartments part of a Phase II plan that was also to include a commercial component.

As part of the first phase, Wright designed Hollyhock House with assistance in its drafting and detailing from others in his office, most notably Rudolph Schindler. Before the building's completion, however, Wright was impelled to leave the United States to devote his attention to another project, the Imperial Hotel in Japan. At this time, Wright left the remaining details and construction supervision of Hollyhock House to his junior designer, Rudolph Schindler. Aline Barnsdall became angry with Wright because she believed that his absence indicated that he did not think her project important enough to merit his attention, and because she was dissatisfied with the work being completed by his contractors. In 1921, Barnsdall fired Wright and temporarily halted the project. At this point, Residences A and B were complete as well as most of Hollyhock House, but upstairs rooms in Hollyhock House were left unfinished.¹¹ Barnsdall retained Rudolph Schindler to finish construction of the upstairs rooms.

Even as the buildings were being completed, Aline Barnsdall was in the process of re-envisioning her involvement with the future use of the site. Disillusioned by the difficulties experienced throughout the project and her perception that the workmanship in its execution was poor, she decided to donate the crown of Olive Hill to the City of Los Angeles.

She first approached the City of Los Angeles in 1923, several years prior to the building's completion, to propose the donation as a memorial to her late father, Theodore Barnsdall. The City did not initially accept the donation; however, and Barnsdall decided to add a community playhouse to the site. She re-hired Wright to design the playhouse, which came to be known as the "Little Dipper" due to the appearance of a "tail" on the building site plans. Construction began on November 7, 1923, but was halted by City officials about two weeks later to address building code violations. Barnsdall fired Wright again and canceled the project. Likely because she needed to do something with the unfinished foundations, Barnsdall hired Schindler to transform them into a terrace with a fountain, pergola, and children's wading pool. The Schindler Terrace was completed in 1925.¹²

After completion of the Schindler Terrace, Barnsdall again offered Olive Hill to the City. On December 23, 1926, she made a formal transfer of the property to the City. The transfer of the property was regarded as a beneficent gift from Barnsdall to the public as indicated by newspaper articles that referred to it as her "Christmas Present to the City."¹³ Upon receiving the property, the City Parks Department leased Hollyhock House to the California Art Club for 15 years.¹⁴ The City leased Hollyhock House to the California Art Club in 1927. During their occupancy of the house the California Art Club tore out the partition walls and bathroom fixtures in the Guest Bedroom Wing and created an exhibition gallery. The Club also replaced the concrete floor in the Pergola in 1939.¹⁵

¹¹ Herr, 2007.

¹² Ibid.

¹³ *Los Angeles Times*, "Donor Adds to Princely Gift" August 1, 1927.

¹⁴ *Barnsdall Park Historic Site Survey*, 1995.

¹⁵ Hollyhock House HSR, 1992. Weil references a 1939 building permit application to replace the floor with pressure treated 2"x6" floor joists and a 2" concrete top.

A few months after donating the crown of the hill with Hollyhock House to the City, Barnsdall donated an additional two acres of the hill, including Residence A. Barnsdall made her gift contingent on the provision that the building be used exclusively for classes for children in modeling, drawing, dramatics, music, and dancing.

Aline Barnsdall also attempted to donate her other Olive Hill residence, Residence B, for park use as well. However, as with Residence A, the gift came with stipulations for its future use, and the gift was ultimately rejected by the City. Barnsdall who envisioned the entire site being used to further different branches of the arts, at first proposed a dance school for the “Dalcroze” method of music instruction, which involved rhythmic exercises. Later, she proposed a working women’s club.¹⁶ After agreeing to Barnsdall’s terms (which included the lease and purchase option of another property), the City later invalidated the agreement, contending that the City Council was supposed to act on the terms. Barnsdall sued to retrieve her last donation and later tried to retrieve the entire Olive Hill property. The basis of Aline Barnsdall’s suit against the City to try to win back the entirety of the Olive Hill complex was her feeling that her gift was not appreciated. Indeed, by the early 1940s, the buildings on the site had fallen into a state of great disrepair. However, Barnsdall’s contention that the neglect in the buildings’ maintenance represented a misuse of her gift was not enough to win her case in its entirety. In 1941, Barnsdall won back only her last donation, Residence B. Aline Barnsdall died in 1946, and her heirs sold the property containing Residence B to make way for new apartment construction. Residence B was demolished in 1954.

When the California Art Club’s lease expired in 1942, the City chose not to renew due to the deteriorating condition of the property. Hollyhock House was left vacant until 1945 when Dorothy Clune Murray acquired use of the property through a lease with the City. It was to serve as headquarters for the Olive Hill Foundation (also called Clune Memorial Trust), a philanthropic foundation established in memory of her son, James William Clune, who was killed in the Battle of the Bulge. Although the organization’s records have been destroyed, it is believed that the administrative aspects of the foundation were to be combined with recreational facilities for returning World War II veterans. Toward this end, in 1946, Mrs. Murray financed the first major rehabilitation/remodel of Hollyhock House under the guidance of Frank Lloyd Wright and Lloyd Wright. Conflicts ensued regarding aesthetic choices in the rehabilitation of the structure between the Wrights and Mrs. Murray, but the project was finally completed in 1948.

From Weil’s Hollyhock House HSR:

Undated photographs taken by Will Connell and a letter from Frank Lloyd Wright to Dorothy Clune Murray in 1945 document those rooms throughout the house were subjected to major demolition. The photographs of the Living Room show piles of debris in the center of the room, art glass panels on the floor and the walls shorn of the original wood trim. Frank Lloyd Wright was hired by Mrs. Murray to remodel the entire house. The architectural drawings were prepared in the office of Lloyd Wright. Their renovation of the house between 1946 and 1948 altered the appearance and character of the interior of the house. Rooms that were completely rebuilt include the Porch, Gallery, Owner’s Room and Kitchen.....A small basement was added under the Gallery to be used for a furnace room.

¹⁶ *Los Angeles Times*, “Dancing Classes Planned for Park” December 24, 1928; “New Clubhouse Luxurious” February 13, 1931.

The Basement was also reorganized at this time with the creation of a Men's Toilet Room, Women's Toilet Room, Women's Powder Room, Heater Room, and Cellar.

The City of Los Angeles carried out extensive repairs to the house in 1969. This included replacement of floor framing and floors, exterior plaster and roof repairs. Installation of a rain tank in the Court caused a large portion of the lawn to be excavated. In 1970, the open Porch that was added in the 1946–1948 renovation was removed and replaced with a new open structure.

An examination of 1946 drawings titled, "Reconstruction of the Main Building at Barnsdall Park for the Olive Hill Foundation – Los Angeles, Calif." shows the following alterations to the house:

- Living Room: "Restore" trim, new skylight over fireplace, lift existing skylights with sidelights;
- Porch: Remove tile floor, fill tump and puddle for new cement tile, and remove roof over terrace;
- Gallery: New French doors, remove interior partitioning, remove window sashes and fill in with masonry on north walls;
- Roof Plan: New flashing behind parapet walls, apply wear-coat to flat roofs over living room, gallery, study, and music room; and
- Kitchen: Completely remodeled kitchen designed by Lloyd Wright.

Wright also designed an exhibition pavilion and lecture building in 1954 (demolished 1970) under the direction of R. Kenneth Ross, Director of the Municipal Art Department (predecessor to the Cultural Affairs Department). The department's art shows sparked renewed interest in the park. After the Murray lease on Hollyhock House expired in 1956, Ross hired Frank Lloyd Wright to design a new master plan for Barnsdall Park. Though the plan was shelved due to fundraising concerns, it planted the seed for a new Municipal Art Gallery to be located on the crown of Olive Hill. The Recreation and Parks Department commissioned another master plan in 1964, which resulted in the construction of the Junior Arts Center in 1967. In 1971, the last and largest building was added to the site; the Municipal Art Gallery.

Mayor Tom Bradley urged the City of Los Angeles Department of Public Works to authorize the second major restoration of Hollyhock House in 1974. Frank Lloyd Wright's son Lloyd was retained as supervising architect. Lloyd Wright sought to restore the original appearance of the rooms and their relationship with each other. Major components over the two-year project included enclosing the porch, rebuilding the wood screen and cabinet dividing the Music Room and the Entrance Hall, and designing new drapes and carpet for the Living Room based on a 1920s Hollyhock motif salvaged from carpet in the Study. Major exterior work consisted of sandblasting the original plaster and paint and replastering with a color and material texture/composition that was different from original specifications.¹⁷ Minor aspects included installation of wood screens in the niche, porte cochere, and entrance loggia; alterations to the courtyard and pool; renovation of the lily pond and tiered amphitheatre; pouring a new concrete slab in the courtyard to improve drainage away from the foundation; removing and replacing broken or damaged windows; and minor repair to the interior

¹⁷ Archiplan and Martin Weil, *Hollyhock House Historic Structures Report*. Los Angeles Department of Cultural Affairs, 1992. Volume I: 6-7. Frank Lloyd Wright, *Specifications: Residence "A"-A. Barnsdall, Hollywood, California*, 1920. Pg. 18–24. On file at Hollyhock House Archives, Los Angeles, California.

millwork.¹⁸ Hollyhock House opened to the public as a house museum on October 16, 1975, and final renovation activity was completed in 1976.

Seeking further development of Barnsdall Park, Mayor Tom Bradley launched a new effort to restore the park with the creation of the Barnsdall Park Task Force in 1984. This led to the completion of three site surveys and master plans in 1988–1989 by authored by Martin Weil with Archiplan. These studies culminated in the first Hollyhock House HSR by Weil in 1992.

In 1990, Virginia Kazor, then Hollyhock House Curator, led a restoration of the living room furnishings and décor to the early 1920s. This work included the reproduction of original sofas, tables, stools, and a straight-back chair, extensive repair and reupholster of original easy chairs, the replacement of 1946–1948 fluorescent with incandescent lights and the plaster on the walls, and repainting the ceiling to resemble the finishes used in the room during that period. The bronze powder finish that was used on the Living Room walls was applied to the walls on the Entrance Hall, Porch, and Music Room. Friends of Hollyhock House raised the funds to reproduce the original sofas.¹⁹

On January 14, 1994, a 6.7 magnitude earthquake struck the Los Angeles area. Named the Northridge Earthquake, the epicenter was centered in the community of Reseda, 20 miles from Hollyhock House and the Barnsdall Park grounds. The earthquake caused the deaths of 61 people and damages exceeding \$20 billion. Barnsdall Park and Hollyhock House were closed to the public pending an inspection and repairs.²⁰

As part of the disaster response, structural assessments of Hollyhock House by the Federal Emergency Management Agency (FEMA) determined Hollyhock House sustained significant damage and would require seismic retrofitting and other structural strengthening of the buildings before reopening to the public. Funds to perform this work were made available by grants from the FEMA Public Assistance Division, the California Office of Historic Preservation, and monies allocated in Proposition G, a local bond passed by Los Angeles voters in June 1990 to seismically retrofit and strengthen city-owned buildings and bridges.²¹ This seismic retrofit work to stabilize the building began the third major renovation of Hollyhock House.

Phase I (2001–2003). Phase I commenced in May 2001 and comprised a partial seismic retrofit of Hollyhock House and Residence A, partial roof repair, and restoration of the hollyhock-themed art stone. The seismic retrofitting actions included inserting structural steel and anchoring systems to improve the bracing and stability of the cement block and hollow clay tile (HCT) wall to the wood-framed and stucco roof. The steel beams were installed in the living area, in the loggia columns, and roof support systems near the main entrance, and concealed in a fashion to appear invisible to observers.²²

¹⁸ *Hollyhock House Historic Structures Report*, 1992. Volume II.

¹⁹ Weil, 1992.

²⁰ U.S. Department of the Interior, U.S. Geological Survey, website: <http://pubs.usgs.gov/of/1996/ofr-96-0263/execsum.htm>.

²¹ U.S. Department of the Interior, National Park Service, National Historic Landmark Nomination: Aline Barnsdall Complex, Jeffrey Herr, Hollyhock House Museum, 2005. City of Los Angeles, Bureau of Engineering, *Hollyhock House, Barnsdall Art Park: California Cultural and Historical Endowment – Round 3*. PowerPoint Presentation, 2008.

²² Herr 2005, Addendum: 1-2.

The effects of the Northridge quake coupled with years of general neglect left many of the 22 roofs of Hollyhock House in poor condition. Sagging, ponding, and leaking roofs allowed water penetration to create considerable water damage to the interior walls and floors. Repairs consisted of replacing the existing ca. 1980 tar-paper roofing material and stucco wall cladding along the parapet and position a watertight membrane to encase the roof and parapet walls. New roofing and stucco were applied atop the membrane.

Rehabilitation of the damaged abstract hollyhock motif-styled parapet frieze stones consisted of tagging each frieze stone to record its location, followed by a low-pressure, nonabrasive washing, and a patch crack and break repair process. Frieze stones damaged beyond repair were recast in foam molds with appropriate materials to replicate the composition, texture, and color of the originals. The rehabilitated frieze stones were reattached in their original locations via internal steel pins to connect with steel anchors in the HCT walls. Barnsdall Park reopened to the public, yet Hollyhock House remained closed pending further repairs and hazardous materials abatement.²³

Phase II (2004–2005). Phase II commenced in December 2003. Depletion of FEMA funds for seismic retrofitting left other unresolved repair and hazardous materials concerns. Work tasks such as refurbishing the interior, replacing corroded piping, repairing numerous roof leaks, and removing damaged materials caused by water, wood rot, and termites were addressed in this stage of the Hollyhock renovation. The removal of lead paint, asbestos, and mold called for hazard mitigation resolution before the house could be reopened to the public. Phase II repairs were funded by a municipal bond.²⁴

The lead paint abatement required the removal of paint from the exterior woodwork. Research to uncover the original color revealed the original tint to be a pale green resembling the underside of an olive leaf.²⁵ The windows and doors were removed, inspected, repaired, and reinforced as needed and then reinstalled as part of the lead paint abatement process. In the interior, the asbestos-based kitchen floor installed in the 1950s was removed and replaced with a cork floor replicating the original installed by Lloyd Wright in 1946. Missing and damaged furniture was replaced, and a period rug was donated. Utility systems such as the furnace and duct work, faucets and drains, and the electrical were inspected and cleaned as required. New conduits were installed via the basement to the former servants' quarters, which was converted to office space.²⁶

Water penetration issues stemming from compromises in Wright's inherent design and decades of structural neglect required a mold, termite, and water damage survey following the lead paint abatement process. Termite damage was identified in the child's room and porch alcove and abated. Copper-lined box planters along the roof stairwells were removed, repaired, and reinstalled. Cracked concrete box planters were repaired with an approved epoxy patch system that best matched the original color and texture. All plant boxes received a reversible copper cover sealing the boxes and eliminating a source of water penetration on the roof. All concrete bond beam mortar joints were

²³ Herr, 2005, Addendum: 1-2., City of Los Angeles, Bureau of Engineering. *Hollyhock House*, 2008.

²⁴ *Los Angeles Times*, "Hollyhock is ready for company" June 6, 2005, accessed at: <<http://articles.latimes.com/2005/jun/06/entertainment/et-weekarts6>> on 21 April 2009. Herr 2005, Addendum: 1-2.

²⁵ *Los Angeles Times*. "Some Unfinished Business" June 1, 2003. Accessed at <<http://articles.latimes.com/2003/jun/01/entertainment/ca>> on 22 April 2009.

²⁶ Herr 2005, Addendum: 1-2.

inspected for cracks. Loose corners were reset and cracked corners were re-pointed. Other cracks previously repaired with rubber silicone were left in place. The glass roof atop the pergola was inspected, joints were cleaned and re-caulked, and new flashing installed.²⁷

Table A: Chronology of Use and Development

1602	Spanish assert claim over California.
1802	A tract of 6,647 acres granted to Josef Vicente Feliz as <i>Rancho Los Feliz</i> .
1846	Title conveyed to Maria Ygancia de la Concepcion Carrillo de Berdugo, widow of one of Feliz's sons.
1853	Sra. Maria Berdugo conveys title to her daughters.
1873	Large tract of land, including site of Barnsdall Park, purchased by James Lick.
1882	The Lick Tract subdivided.
1914–1915	Frank Lloyd Wright and Aline Barnsdall meet in Chicago.
1916	Wright begins design of Theater and Hollyhock House for Aline Barnsdall, Los Angeles, California.
	Wright receives commission for the Imperial Hotel and begins periods of extended travel between the United States and Japan.
1917	Theodore Barnsdall dies, leaving his daughter Aline Barnsdall a multi-million dollar fortune.
	Barnsdall's daughter, Elizabeth "Sugar Top" is born.
1919	In June, Aline Barnsdall purchases 36-acre site, locally known as Olive Hill, from Mary Harrison Spires.
	Frank Lloyd Wright returns to the United States in September, designs Master Plan I, and in December departs for Japan leaving R.M. Schindler to supervise construction.
1920	May – Building Permit issued for the Aline Barnsdall Residence on Olive Hill
	July to December – Wright in U.S.
	August – Barnsdall informs Wright that she is changing the program, adding a commercial component.
	In December, Aline Barnsdall forms the Olive Hill Construction Company to act as her own representative in the construction of her house and two guest houses on the Hill.
	Frank Lloyd Wright designs Master Plan II.
1921	In September, construction of Phase 1 (Hollyhock House, Residence A and Residence B) is nearly complete and Barnsdall decides to abandon her Master Plan, eliminating the business and theater zones. Master Plan II is declared substantially complete with three buildings. Barnsdall fires Wright and retains Schindler to complete the construction of upstairs rooms in Hollyhock House.
1922	Wright returns to America from Japan and opens an office in Los Angeles.

²⁷ Ibid.

Table A: Chronology of Use and Development

1923	Barnsdall makes a first unsuccessful attempt to donate Olive Hill to the City. She rehires Wright to design a children’s playhouse, which came to be called the “Little Dipper.” However, the project is halted by City officials two weeks into construction and Barnsdall abandons the playhouse project.
1924– 1925	Barnsdall hires R.M Schindler to transform the unfinished foundations of the Little Dipper playhouse into a terrace and pergola. Called “Schindler Terrace,” the project is completed in 1925 in collaboration with Richard Neutra. Schindler executes several other commissions for Barnsdall until they disagree over fees for the remodeling of Residence B in 1929.
1927	In January, Aline Barnsdall donates 11 acres at the summit of Olive Hill, including Hollyhock House and garage to the City of Los Angeles. The California Art Club moves into the residence for the next fifteen years.
	“Little Lattice Playhouse” is built near Vermont Avenue and opens on June 30. (<i>Los Angeles Times</i> , “Program by Children Opens Park” 6/30/1927.)
	August 2 – Barnsdall donates an additional two acres containing Residence A to the City.
	August 31 – Barnsdall Park and the California Art Club officially opens to the public. The California Art Club holds a 15-year lease on Hollyhock House ending in 1942.
1930	Lighting system installed around Barnsdall Park, designed by R.M. Schindler.
	Restrooms built east of the pet pergola.
1931	Barnsdall commissions Lloyd Wright to design a children’s outdoor theater.
1931– 1932	Barnsdall unsuccessfully attempts to donate additional Olive Hill land to the City, including Residence B. Barnsdall retains Residence B and most street frontage surrounding Olive Hill. When the City invalidates their agreement, Barnsdall files a lawsuit to regain title to the donated land.
	California Art Club plans addition to Hollyhock House for an art gallery.
1941	City reconveys title of Residence B and 9.12 acres to Barnsdall.
1942	California Art Club vacates Hollyhock House.
1942– 1945	Hollyhock House is unoccupied during WWII, with the exception of a caretaker, and it falls into disrepair.
1945	Dorothy Clune Murray leases Hollyhock House for ten years for her Olive Hill Foundation for Cultural Research and begins rehabilitation of Main Building, supervised by Lloyd Wright in collaboration with Frank Lloyd Wright.
	Aline Barnsdall dies in Residence B. Barnsdall’s heirs begin selling off portions of the Olive Hill street frontage for multifamily and commercial development.
1948	Rehabilitation work started in 1946 is completed.
1953– 1954	Wright designs and constructs an Exhibition Pavilion for his “60 Years of Living Architecture” exhibit at Barnsdall Park, necessitating the demolition of the restrooms near the pet pergola.
1954	Residence B is torn down and apartments are built on the site.
1956	Murray’s lease expires, vacates, and the City resumes administration of Hollyhock House.

Table A: Chronology of Use and Development

1957	Wright prepares Barnsdall Park Master Plan drawings.
1963	Hollyhock House declared City landmark.
1964	Six new structures proposed in a Master Plan by Hunter & Benedict, with Kahn, Farrell & Associates, of which two are built in 1967 and 1971.
1965	Barnsdall Art Park designated Historic-Cultural Monument No. 34, February 26, 1965.
	A shopping center is constructed on the west side of Vermont Avenue. This moves the front entrance of Barnsdall Park from Vermont Avenue to Hollywood Boulevard.
1967	Rehabilitation of Hollyhock House and Residence A.
	Construction and opening of Junior Arts Center.
1971	Hollyhock House and Residence A listed in National Register of Historic Places as Barnsdall Complex.
	Municipal Art Gallery added to Barnsdall Park complex.
1974– 1976	Rehabilitation of Hollyhock House, Phases 1–7, by City Department of Public Works with Lloyd Wright in association with Eric Lloyd Wright as consultant.
	Demolition of the Frank Lloyd Wright Exhibition Pavilion (1974).
1984	Barnsdall Park Taskforce appointed by Mayor Tom Bradley.
1988	Barnsdall Park Survey and Analysis finds maintenance problems associated with water penetration and structural and housekeeping issues.
1989	Barnsdall Park Board of Overseers formed.
	Barnsdall Park Restoration and Maintenance Program Manual.
	Historic Structures Report for Hollyhock House Garage.
1990– 1991	Project to recreate the appearance of Hollyhock House Living Room to the 1921–1926 period; the focus of the work was the Living Room, the Alcove, Music Room, Entrance Hall, and Porch.
1992	Historic Structures Report for Hollyhock House and Schindler Terrace.
	MTA begins construction of Red Line subway extension into Hollywood; removing several olive trees and displacing the parking lot for a staging area.
1994	Northridge Earthquake – FEMA damage assessments note significant damage to Hollyhock House, Residence A and the Schindler Terrace.
2000– 2005	Hollyhock House closed for \$21 million rehabilitation and seismic retrofit.
2007	The Aline Barnsdall Complex, including Hollyhock House, Residence A and other Wright associated structures, is designated as a National Historic Landmark on March 29, 2007.

Updated Development History of Specific HSR Areas

This supplemental HSR investigates work for a Phase III rehabilitation project, which includes repairs in ten areas of focus. These areas include the Living Room fireplace, the Child's Room fireplace, the Porch Roof, the Dining Room Roof, the Gallery, the south exterior wall of the Library, the Conservatory, the Outer Terrace wall at the location of a mature pine tree, the Round Fountain and Square Fountain, and the Garage. The following section will provide a summary of the conclusions in the 1992 HSR, provide an updated narrative of the development history from 1992–present and present any new information that has surfaced since completion of the HSR.

The Living Room Fireplace. The living room is one of the best-documented rooms in Hollyhock House. Several historic photographs depict the appearance of the room from 1921–1926, and these were used to inform a room recreation by Virginia Kazor in 1990–1991. The original interior of the living room was largely gutted during the 1946–48 renovation, including removal of the wood wainscot, ceiling, soffit, and lighting. Later renovations in 1969 resulted in the removal/replacement of the floor for the excavation of a crawl space. Finally, the 1974–76 renovation included the installation of wall-to-wall carpeting designed by Lloyd Wright to mimic the original rugs. The 1990–91 room recreation involved reconstruction of the original furnishings, new bronze powder and paint to simulate original finishes, and new incandescent lighting.

Although most of the other original architectural details in the Living Room were removed and replaced in the 1946–48, 1969, and 1974–75 renovations, the fireplace was not identified for any changes. The pool surrounding the fireplace was retiled in 1974–76 with multicolored tile, and the bottom was brought up by six inches to adhere to building code for unguarded pools. The tile was later painted to look like concrete during the 1990–92 room recreation, and gold tiles were installed to match the 1920 design.

In addition to the general seismic strengthening and waterproofing completed during Phase I, specific repairs in the Living Room included a structural repair at the southwest corner, as well as repair of a light soffit and repair of the skylight screen above the fireplace. The distinctive art stone panels above the fireplace were cleaned, re-pointed, and protected with plywood while the larger structural repairs were underway.

The Child's Room Fireplace. There are no known photographs inside the Child's Room from the 1920s. The earliest known photograph is from ca. 1945, and shows the interior as having been stripped for a major remodeling, which occurred in 1946–48. The 1946–48 renovation included the relocation of a wall between the Child's Room and the Play Porch to include the doors to the terrace in the Child's room, as well as the removal of original trim and cabinetry. Minor changes were made to the room during the 1974–76 renovation.

Although most of the other original architectural details in the Child's room were removed and replaced during the 1946–48 renovation, the fireplace was not identified for any changes and appears to be original. The plans for the 1974–76 renovations noted that the contractor should check for leakage on the log lighter piping and replace the entire system if necessary, and in 1992, the HSR noted a patch of discolored concrete on the left pillar.

Phase I drawings indicate that this chimney had separated from the wall and would be re-attached as part of the structural repairs. The art stone fireplace had sustained damage on the left corner, which was patched. The whole fireplace mantel was cleaned and protected with plywood while the structural repairs were underway.

The Porch Roof. The porch has undergone extensive alterations since it was constructed. Originally, the porch was an enclosed space that connected the Living Room with the outdoor Court, in addition to connecting the northern and southern parts of the house. The doors leading to the Court were originally glazed bi-fold panels flanked by fixed glazed panels, and the doors to the living room were glazed double doors. The original design for the flooring was art stone, but later plans called for wood, which was apparently installed. However not long after the house was completed the wood floors were reportedly water damaged and replaced with concrete or tile. The flooring was replaced by a concrete slab during the 1946–48 renovations and resurfaced during the 1974–76 renovations. Plans from the 1946-48 renovations included the removal of the Porch roof; however, later photos suggest that this removal occurred much later. Historic photographs taken in 1968 and 1969 depict the complete removal of the porch roof and east wall (Figure 6). Temporary enclosures were placed on the entrances to the house from within the porch. According to the HSR, the roof and ceiling were replaced with a new superstructure composed of new steel beams, 2" × 8" joists, new flashing, cement plaster ceiling with metal lath, and steel tube columns that were encased in redwood. The few architectural details in the porch that date from 1921–1927 include portions of the cast stone base, planter base, west wall planters, and the cast stone piers on the western wall.

The oldest parts of the existing porch roof date from 1970, as evidenced by the complete removal of the roof in circa 1968. The ceramic tile that is currently installed on the roof likely dates to 1970, due to the probable difficulty in removing and re-installing the original tiles without extensive damage. The plans called for replacement of the tile deck “to match existing,” but noted the work was not in contract. Although the current tile is not likely to be any older than 1970, there is photographic evidence to suggest that tile was added to the porch sometime in the 1920s.

The earliest available photograph of the porch dates from 1921 and depicts a roof without tiles and a flat surface on the roof (i.e., no concrete curbs on the sides of the staircase). Though hard to see, the bi-fold doors on the porch entrance from the Court are also visible (Figure 1). A photograph taken by Viroque Baker in 1922 shows more clearly the doors and fixed glazed panels that make up the porch entrance (Figure 2). Aline Barnsdall’s personal photo album contains a picture taken of her daughter “Sugar Top” seated on ceramic tiles on the porch roof. This photograph was taken sometime between 1921 and 1926 (Figure 3). A circa 1925 photograph from Hollyhock House archives shows that the ceramic tile had been added to the porch roof, and a concrete curb had been set along the north side at the top of the staircase to the porch terrace sometime in the mid-1920s (Figure 4). At this time, the tile appears to have extended to the roof over the hallway leading to the main entrance. The porch roof appears to have remained in this configuration through the 1940s, as suggested by a Will Connell photograph taken circa 1945 (Figure 5). According to the HSR, the tile-covered curb atop the east wall was removed as part of the 1946–48 renovations. A concrete curb was installed along the southern edge of the staircase leading to the porch roof terrace sometime between 1945 and 1975.

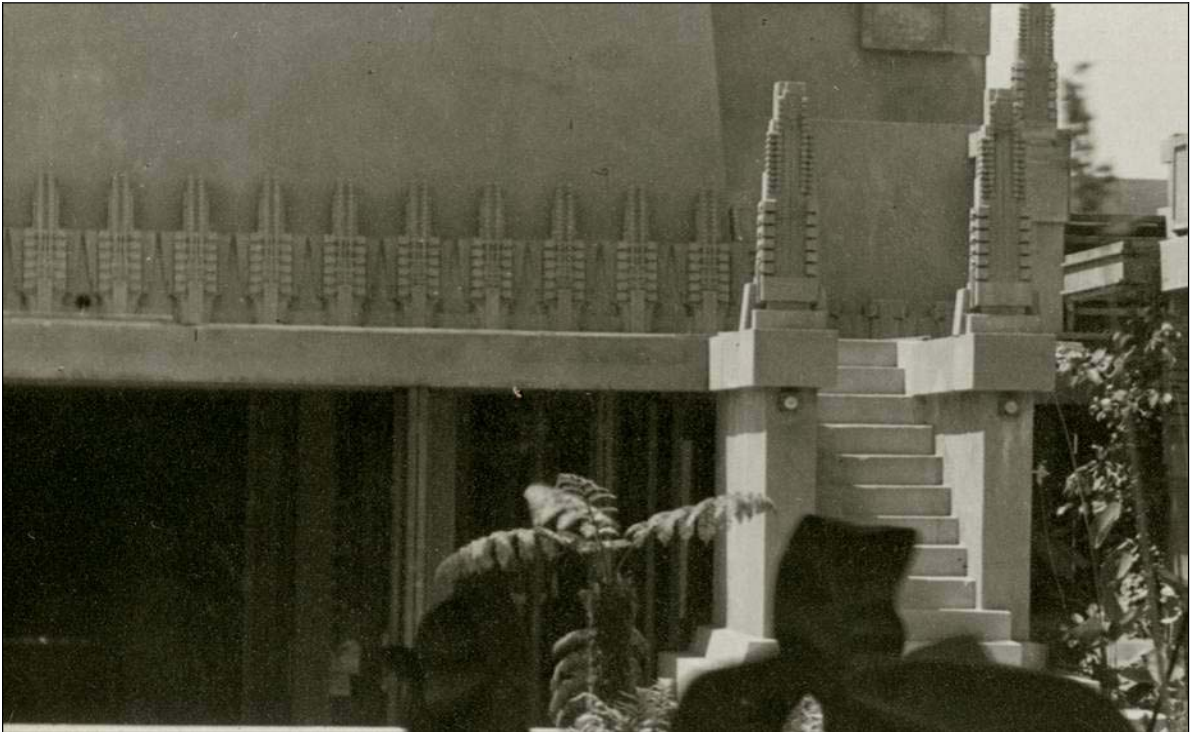


Figure 1: Close-up from a 1921 photograph depicting part of the porch, porch roof terrace, and staircase. No ceramic tile is present on the porch roof, nor are the concrete curbs that currently run across the top of the staircase. Photo courtesy Hollyhock House Archives.

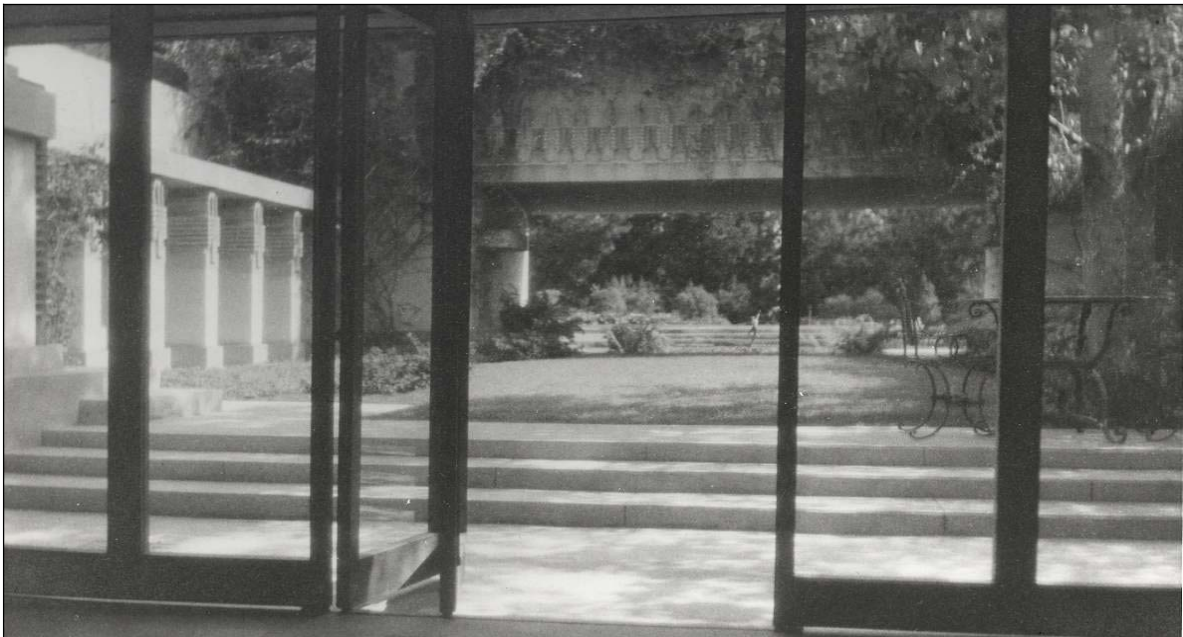


Figure 2: A circa 1922 photograph by Viroque Baker showing the bi-fold doors connecting the Porch to the Court. Photo courtesy Hollyhock House archives.



Figure 3: Barnsdall's daughter "Sugar Top" seated on the Porch Roof terrace between 1921 and 1926. Note the ceramic tile on the roof. Photo courtesy Hollyhock House Archives.

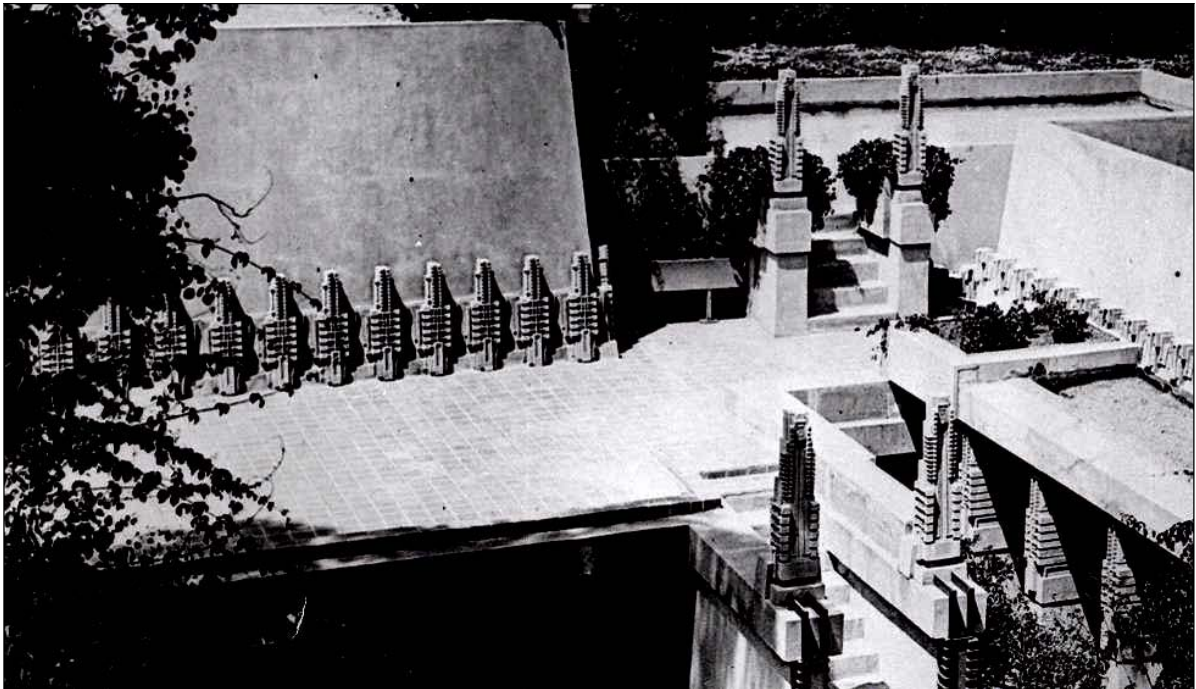


Figure 4: Close-up of an Aerial photograph of the Porch Roof, ca 1925. The tile extends all the way to the entryway roof. Photo courtesy Hollyhock House Archives.



Figure 5: Circa 1945 Will Connell Photograph depicting the Porch Roof. The configuration appears to be the same as it was circa 1925. Courtesy Hollyhock House Archives, original at the California Museum of Photography, UC Riverside.



Figure 6: 1969 photograph of Porch removal. A new steel superstructure replaced the original porch in 1970. Photo Courtesy Hollyhock House archives.

In Phase I, the Porch Roof surface (including tile) was supposed to be removed to the underlying structure and replaced. However, this did not happen and is being addressed as part of Phase III repairs. According to the documentation carried out during the repairs, the flashing between the porch roof and the living room was removed and replaced.

The Dining Room Roof. The dining room is unique within Hollyhock House as the only major room that was not extensively remodeled. Many architectural details from 1921 remain, including the wood paneling, plaster, art glass, windows, French doors, built-in drawers, and the dining room table and chairs. The room escaped the 1946–48 renovation with relatively minor alterations, including the replacement of the ceiling light fixture, paint on the plaster walls and ceiling, and the addition of horizontal bands on the wood paneling. In 1969, the wood floor was replaced, and during the 1974–76 renovation, two cast bronze lights were installed above the built-in chest. In 2009, Jeffrey Herr had the ceiling fixture reconstructed using photographic evidence from circa 1922.

Like all of the roofs that shelter Hollyhock House, the roof over the Dining Room has retained the same configuration but has been repaired extensively over the years. Originally, the roof was covered in felt and coal tar pitch, covered in gravel. During the 1946–48 renovation, the roof received new galvanized iron flashing and counter-flashing, a new composition roof, and was re-covered with gravel. During the 1974–76 renovations, the roof was reportedly covered with DEX-O-TEX, which was reapplied in circa 1985. In 1989, a new coat of DEX-O-TEX was applied to match the color of the 1974–76 application. The 1992 HSR noted that winter rains that year had left ponding on the Dining Room roof along with several other roofs.

During Phase I repairs, the built-up roof was covered with a cap sheet, although plans called for removal and replacement of roofing material.

The Gallery. The Gallery is perhaps one of the most altered rooms in Hollyhock House. Originally, the room served as a guest bedroom suite composed of two separate rooms with their own private baths. Aline Barnsdall stayed in them until the upstairs quarters were completed in 1926. There is no information from the 1920s that documents the appearance of these guest rooms.

While the California Art Club occupied Hollyhock House from 1927–1942, the guest rooms and baths were demolished, and the rooms became one large gallery space. No photographic documentation has surfaced that depicts the Gallery during this time. The earliest photograph of the interior is a Will Connell photograph from circa 1945, after the interior had been largely gutted for the 1946–48 renovation. The 1946–48 renovation included removal of windows on the north walls, new French doors in the center of the north wall, removal of some interior partitioning, and the installation of new fluorescent lighting, cork floor, and textured wood paneling. During the 1974–76 renovation, the cork floor was removed, the plaster walls and ceiling were painted, and some of the doors may have been changed. The lighting scheme was expanded with eight additional light fixtures and replaced the fabric shades with translucent plastic covers.

During Phase I repairs, no changes were made to the interior of the Gallery. On the south exterior wall, the art stone was removed, cleaned, repaired, and reinstalled atop new flashing and with new

anchors. Documentation depicted the repair of termite damage on the south wall near the doorways as well.

The Library (Exterior Wall). The Library, originally known as the Study, is not well-documented. The current configurations of the ceiling, window openings, and bookcases don't exactly correspond to the original drawings, but there are no known photographs of the room from 1921–1945. The first photo of the room is a Will Connell photograph from circa 1945, and it only depicts the east wall of the room after architectural details (including the original bookcases) had been removed. In 1974–76 the floor was completely redone, eliminating the step down into the room. All of the architectural details in the room date to the 1974–76 renovation, with two possible exceptions. The 1992 HSR concluded that the plaster on the walls were original to 1921, as are the windows.

As part of the Phase I repairs, the light soffit along the perimeter of the walls was removed and replaced to facilitate access to the roofline for structural repairs. Structural damage in the south wall was repaired, interior plaster cracking was repaired, and the ceiling was replaced. The documentation also depicted the repair of termite damage in the room.

The Conservatory. In the 1992 HSR and in the Phase I drawings, this room was called the Conservatory. There is little documentary evidence that portrays this room from 1921–1926. During the 1946–48 renovation, this room received some electrical work, but no other work was noted. In 1969, the floor, ceiling, and exterior doors were replaced. Documentation from 1969 depicts the replacement of floor joists in this room, and also shows a significant crack in east wall near the southeast corner of the room. There is a change in foundation from concrete to brick on the south end of the room, which may account for the wall cracks in that area. The reason for this change in the foundation is unknown; it is possible that an extension of the room was made during construction, or that a substitution in materials was made for some other reason. Aerial photographs from the early 1920s show that the room appears to have the same dimensions as it does currently, but early floor foundation plans do not note the change in materials. Work during the 1974–76 renovation was light, including the installation of cast bronze light fixtures and new electrical outlets.

Phase I work for this area included general crack repair in the plaster on all walls. No mention of a significant crack was made in the plans, though cracking was noted on both the east and west walls at the south end in the 1992 HSR. The ceiling was also painted under Phase I repairs.

The Outer Terrace Wall and Mature Pine Tree. This area refers to portions of the Outer Terrace wall and the southern wall of the Conservatory Garden where they join. The original plans called for an enclosed garden outside the Conservatory entrance, joined to a semicircular Outer Terrace and the original Guest Rooms Terrace by a flagstone path. According to early aerial photographs and a 1927 site plan (Figure 7), the walk was never constructed, but the areas were joined by openings in the walls. This site plan also shows surrounding plantings, including a pine tree in the corner where the south wall of the Conservatory Garden and Outer Terrace join. This landscape detail corresponds to an existing mature pine tree that is causing structural damage to the garden walls.

During the 1974–76 renovation the west and south walls of the Conservatory Garden were removed to the poured concrete footing and replaced with a new concrete wall. The original cast stone elements remained in place on brick footings throughout the replacement. The terrace outer walls were replaced during the 1974–76 renovation as well, with original hollow clay tile replaced by concrete block and plastered over. The original cast stone cap was re-anchored to the new wall. A concrete path through the garden and terrace areas was constructed sometime after 1976.

Phase I plans noted separation of the cast stone caps from the garden walls, and directed that they be re-pointed.

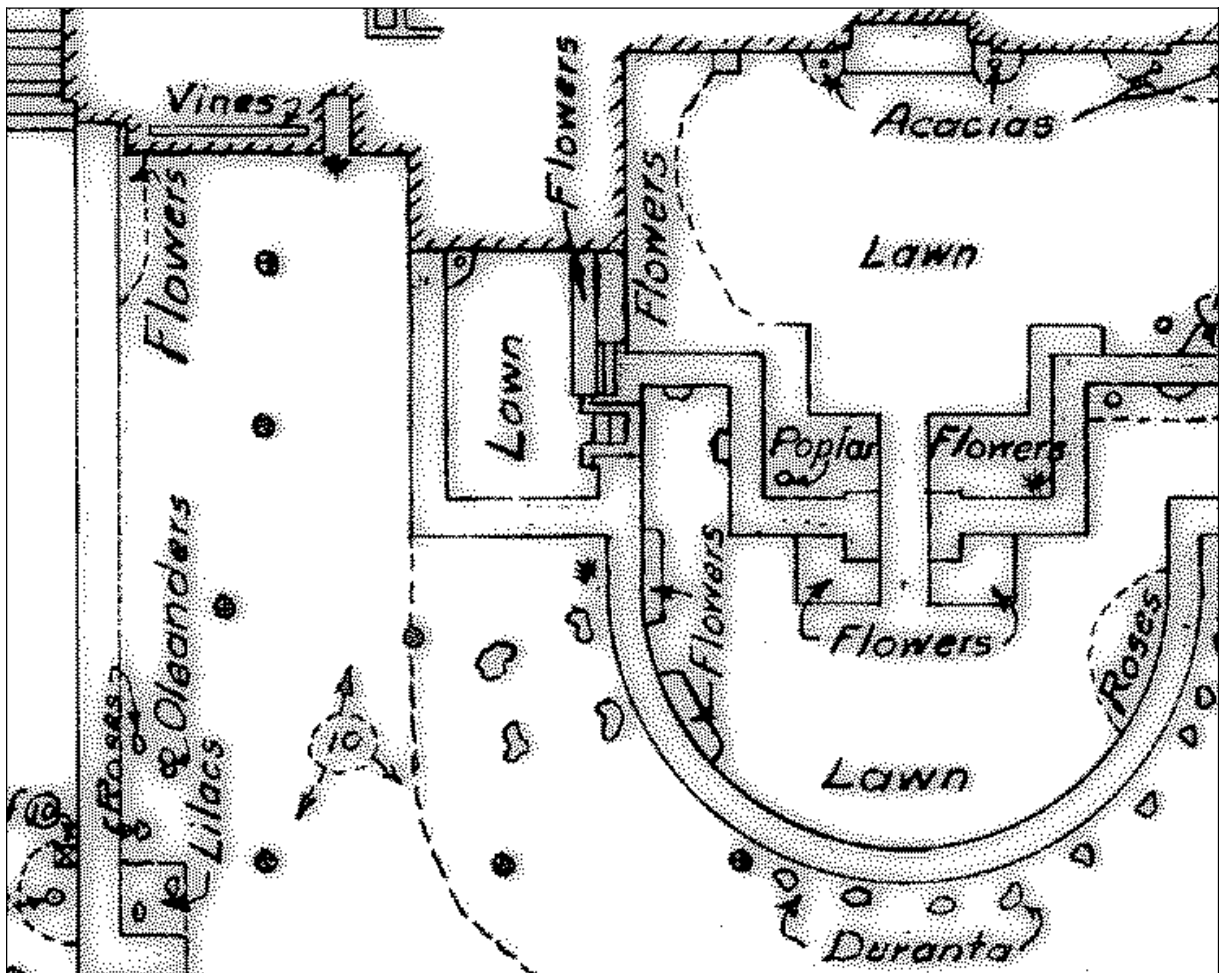


Figure 7: Close up of a 1927 site plan depicting existing plantings. The asterisk mark in the corner where the garden wall and outer terrace join denotes a pine tree. Courtesy Hollyhock House archives.

The Round Fountain and Square Fountain. Original plans called for a watercourse that ran across the east-west axis of Hollyhock House, originating in a semicircular fountain on the eastern terminus of the court and ending in a square pool on the west side of the living room. The two were originally connected by a stream that ran along the north side of the interior court into the living room to a pool in front of the fireplace and then onto the square fountain. The stream appears to have been

abandoned sometime in the 1920s, possibly in connection with major water damage that necessitated replacement of the floor in the porch.

By 1927, the round fountain had been filled in with dirt and planted with flowers, and the natural edge leading into the court had become a concrete edge. The outermost ring containing cast stone stepping stones was planted with lawn. However, sometime during the California Art Club's tenure in Hollyhock House, the fountain was dredged, and the two center circles were filled with water and planted with aquatic plants. During the 1946–48 renovation, plans called for new underwater lighting and nozzles at the waterline that would create a spray curtain, though it is not known whether they were installed. The 1974–76 renovation resulted in substantial rehabilitation of the round fountain, including replacement of the west wall with new underwater lighting, raising the floor of the pool to make it shallower to meet code, sandblasting and refinishing the inner ring of the pool with cement waterproofing, and replacing the outer ring of the pool (containing the lily pond).

The square fountain was originally planned to have a flagstone walk around it, but instead, a concrete curb was constructed, creating bands of lawn on the sides and end of the pool. The lines of the inner wall and outer curb intersect to form square planters at the western corners of the pool. The 1927 site plan called the square fountain a “goldfish pool,” and indicated that it was raised up from the surrounding lawn on a low berm. A photograph from 1964 shows that the concrete curbs and planters had been removed, and the whole area surrounding the pool was planted with bedding plants. The outer concrete curb was rebuilt (possibly as part of the 1974–76 renovation, though it isn't clearly indicated on the plans). The berm upon which the fountain was set disappeared around this time as well, when the surrounding lawn was re-graded.

Plans for Phase I repairs do not show any repairs that were made to the Round Fountain. Cracks in the pool walls of the Square Fountain were patched.

The Garage. Hollyhock House Garage was studied in its own HSR, which was prepared in 1989 by Archiplan Urban Design Collective and Martin Weil. The developmental history in this section is in part summarized from that document. More detail can be found in Chapter II of the 1989 HSR.

The 1989 HSR used four main sources of information to determine the developmental history of the Garage. The first source is the earliest set drawings, dated February 1920, and initialed by Rudolph Schindler. The second source is an undated document entitled, “Specifications, Residence A, Barnsdall, Hollywood... California Grading Plan and Reinforced Concrete, Art Masonry, Carpentry, Lathing and Plastering,” which contained specific references to the Garage. The third source was photographic evidence, composed at the time of only four photographs, all of the south side of the Garage. The last source was physical evidence from investigating the appearance of the structure in 1989. Since the completion of the HSR twenty years ago, some new photographic documentation has come to light, and the building has undergone some seismic repair and rehabilitation.

Originally, the garage building was configured with a three-bay garage that opened to the south. This occupied the western $\frac{2}{3}$ of the building along with an adjacent workroom and a toilet. The eastern $\frac{1}{3}$ of the building was used as the Chauffer's quarters, which contained a bedroom, bathroom, and a closet-sized space. On the east side, the Chauffer's quarters opened up to an open porch. A storage cellar was located beneath the Garage and Chauffer's room, set into the down-slope of the hillside. A

band of art stone was set into a parapet on the roofline, at the base of a canted parapet roof similar to the roofline on Hollyhock House. According to the plans, original windows were mainly wood casement windows, with some fixed windows glazed with leaded glass. The floor in the garage, cellar, and workroom were concrete, while the Chauffer's quarters was supposed to have wood and composition floors. The Garage doors were composed of wooden double doors with rectangular windows set at the top of each door.

The next oldest available drawings of the Garage were prepared in 1948, when the firm of Helsel and Cuervorsy took field measurements and prepared a one sheet drawing showing the existing floor plan of the Garage. The configuration of the garage corresponded with the configuration on the original plans, suggesting that the garage remained largely intact from the 1920s through 1948. The only difference noted was the name of the Chauffer's room, which had been changed to "Park Office."

In 1950, the Garage underwent the first of several alterations. In addition to the reuse of the Chauffer's room as an office, the garage portion was reused as a "Recreation Lounge," and the workroom became a storage room. This change in use resulted in the removal of the original garage doors and the wood-frame infill of the openings. The end bays were fit with a smaller single door each, and a large window was built into the middle bay. Asphalt tile was laid over the concrete floor in the former garage and workroom, and the entire building was reroofed with composition and gravel. The interior woodwork was supposed to be sanded and painted, the plaster was brushed to remove loose paint, and the exterior plaster was given a waterproof coating.

In 1953, the Municipal Art Department was approached to host a major retrospective by the Guggenheim Museum in New York on the work of Frank Lloyd Wright 1893–1953. Wright himself took on the task of designing a new temporary gallery in the forecourt of Hollyhock House. The gallery, which was completed in 1954, incorporated the Garage building as well. Changes to the garage at this time included the enclosure of the porch with 2-inch steel pipe and ¼-inch glass plate, and the use of the interior of the garage for gallery space. The gallery was open from 1954–1969, and during this time, other changes occurred to the garage. Between 1954 and 1959, a partition was added between the middle and third bay of the garage and a furnace was installed. In 1959, the recently-created furnace room was finished with two new walls, electrical outlets, and switches. A major renovation of the garage occurred in 1962–1963, which included the installation of new Men's and Women's restrooms and a new kitchen in place of the old kitchen.

The removal of the temporary Municipal Art Gallery in 1969 resulted in the loss of historic materials from the garage, including part of the art stone band between the garage bay and the porch, and a section of the roof that joined the Garage with the Pet Pergola.

By 1975, the Garage had seen extensive interior partitioning, as shown by the floor plan in Figure 8.

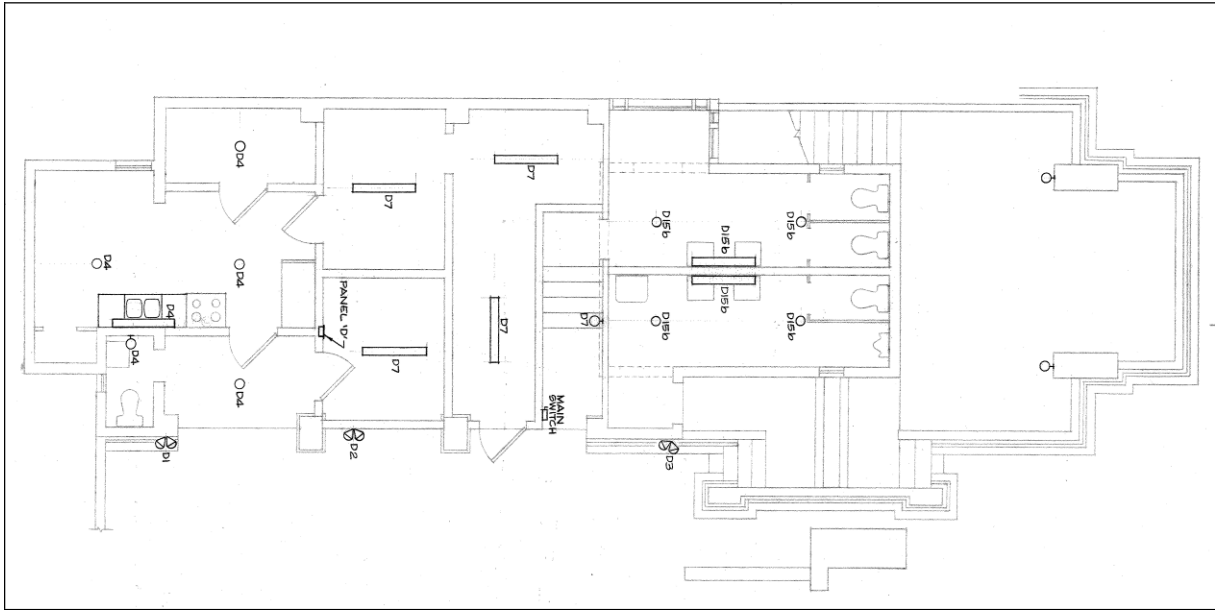


Figure 8: 1971 Floor Plan for proposed lighting improvements, depicting partitioned floorplan. Courtesy Hollyhock House Archives.

By the time the HSR for Hollyhock House Garage was completed in 1989, the building had deteriorated significantly. The Men's and Women's restrooms had become the primary toilet facility for visitors to Barnsdall Park. The rooms in the garage portion became space for the cleaning crew, and the basement was taken over by the groundskeeper.

Phase I repairs to Hollyhock House Garage included extensive structural/seismic strengthening and exterior conservation. Seismic strengthening included tension wall anchors at the roofline and at 4 feet above grade, a steel truss horizontal diaphragm, and a new shear wall between the garage and the former Chauffer's room. Exterior conservation involved repair of damaged hollow clay tile (HCT) walls, new plaster in places to match the historic plaster, removal and repair of art stone, recreation of missing art stone, and repair of the parapet wall. On the interior, all of the nonhistoric partitioning in the garage portion was removed, as well as the lowered ceiling. The restrooms remained in place in the former Chauffer's room. The gypsum boards in the garage bays were removed, and temporarily replaced with fencing. Extensive repairs were made to the roof drainage system, and the rooftop was fit with a waterproof membrane.²⁸

EXISTING CONDITIONS

Overall Structural Description of Hollyhock House

Hollyhock House is a two-story structure located at the crest of Olive Hill in Barnsdall Park in Los Angeles. The building also has a basement level. The structure is a combination of wood-framing and hollow clay tile (HCT) walls clad on the exterior with cement stucco and cast art stone decorative trim elements.

²⁸ *Phase I Master Plan Implementation FEMA Repair and Mitigation*. Drawings issued for bid 12/13/2000.

Previous Damage to and Work Conducted on Building in Response to 1994 Earthquake

The building sustained damage in the 1994 Northridge earthquake. In response to damage to all the buildings at Barnsdall Park, the Federal Emergency Management Agency (FEMA) funded repairs of damage and selected mitigation against future earthquakes.

Assessment of Specific Areas within Hollyhock House

This supplemental update to the HSR focuses on nine specific areas of the building, rather than on the building in its entirety (as was the subject of the original HSR), in preparation for the Phase III project. These areas were selected by Project Restore (PR) and the Bureau of Engineering (BOE) prior to commencement of any work for the preparation of the Supplemental HSR. The selected areas of study are as follows: the Living Room Fireplace, the Child’s Room Fireplace, the Porch Room, the Dining Room Roof, the Gallery, the Library Exterior Wall, the Round Fountain/Square Fountain, and the Garage Building. Five different types of subconsultants were identified as necessary for the preparation of the Supplemental HSR, and then selected by PR/BOE to aid in evaluating each of the selected areas of study. The subconsultants selected included a structural engineer, a forensic water infiltration specialist, a materials testing and crack mapping specialist, a historic fountain restoration consultant, and a materials conservation specialist. The structural engineer and the materials conservation specialist were previously engaged in work on the building for the original HSR. Their familiarity with the building from previous experience lends greatly to the current efforts to assemble the Supplemental HSR. Each of these areas of study required that different combinations of the selected subconsultants be engaged in the evaluation. In addition to the nine areas of study selected by PR/BOE, observations and recommendations for one additional area within the building, the Sunroom, are also provided in the Supplemental HSR. That this area should also be addressed at this time was a recommendation of one of the subconsultants who had worked on the original HSR. With the additional area of study, there are a total of ten areas studied in the Supplemental HSR. Table B lists the areas for study selected by PR/BOE, the additional area of study, and the focused tasks associated with each.

Table B: Selected Areas of Study in Hollyhock House and Scope of Investigation for Supplemental HSR

Location	Scope of Investigation	Specialists Needed
Living Room Fireplace	<ul style="list-style-type: none"> Investigate current structural condition. Recommend appropriate repairs to existing damage. Recommend measures to strengthen the chimney. 	<ul style="list-style-type: none"> Structural Engineer Conservation Specialist Cost Estimator
Play Room Fireplace	<ul style="list-style-type: none"> Investigate current structural condition. Investigate causes and locations of water infiltration. Make recommendations for repairing existing damage and preventing further water infiltration. Recommendations should respect historic materials and appearance. 	<ul style="list-style-type: none"> Structural Engineer Conservation Specialist Waterproofing Specialist Cost Estimator

Table B: Selected Areas of Study in Hollyhock House and Scope of Investigation for Supplemental HSR

Location	Scope of Investigation	Specialists Needed
Porch Roof	<ul style="list-style-type: none"> Investigate current structural condition. Investigate causes and locations of water infiltration. Make recommendations for repairing existing damage and preventing further water infiltration. Recommendations should respect historic materials and appearance. 	<ul style="list-style-type: none"> Structural Engineer Conservation Specialist Waterproofing Specialist Cost Estimator
Dining Room Roof	<ul style="list-style-type: none"> Investigate current structural condition. Investigate causes and locations of water infiltration. Make recommendations for repairing existing damage and preventing further water infiltration. Recommendations should respect historic materials and appearance. 	<ul style="list-style-type: none"> Structural Engineer Waterproofing Specialist Cost Estimator
Gallery	<ul style="list-style-type: none"> Investigate current structural condition. Investigate causes and locations of water infiltration. Make recommendations for repairing existing damage and preventing further water infiltration. Recommendations should respect historic materials and appearance. 	<ul style="list-style-type: none"> Structural Engineer Conservation Specialist Waterproofing Specialist Cost Estimator
Conservatory (Additional Area of Study)	<ul style="list-style-type: none"> Investigate current structural condition. 	<ul style="list-style-type: none"> Structural Engineer
Library Exterior Wall	<ul style="list-style-type: none"> Investigate current structural condition. Recommend appropriate repairs to existing damage. 	<ul style="list-style-type: none"> Structural Engineer Conservation Specialist Cost Estimator
Outer Terrace wall at Location of Mature Tree	<ul style="list-style-type: none"> Examine damage to Outer Terrace wall, recommend repairs. Determine whether removal of the tree would meet the Secretary's Standards. If applicable, recommend appropriate mitigation measures for removal of the tree. 	<ul style="list-style-type: none"> Structural Engineer
Round Fountain and Square Fountain	<ul style="list-style-type: none"> Investigate current condition of both fountains. Make recommendations for repair. Recommendations for square fountain based on visual inspection only. 	<ul style="list-style-type: none"> Fountain Specialist

Table B: Selected Areas of Study in Hollyhock House and Scope of Investigation for Supplemental HSR

Location	Scope of Investigation	Specialists Needed
Garage Building	<ul style="list-style-type: none"> • Conduct walkthrough of garage with PR/BOE and GSA staff. • Advise on appropriate repairs and upgrades to convert the garage into a temporary construction office. 	<ul style="list-style-type: none"> • None

While this document is not intended to stand alone and the original HSR should be consulted, this section briefly summarizes the findings of the original HSR in regard to an overall description of the building and its conditions before delving further into the particular areas of interest for this study. Once this general overview is provided, this section shall briefly describe the subconsultants engaged in assessing each of the specific areas of study before discussing their findings in regard to each individual area in detail.

Subconsultants' Scopes of Work

Structural Engineering by Melvyn Green of Melvyn Green and Associates. The structural engineer was asked to prepare a structural building description for each of the selected areas of study, to identify their structural elements and systems, and to assess the condition of building material materials including the integrity of structural elements and systems. Also, as part of this subconsultant's scope of work, he was asked to identify in the selected areas of study, causes of material deterioration, including water infiltration at the roof and foundation if known or suspected. Based on his evaluation, he was then asked to make recommendations for further materials testing and analysis as well as treatment approaches, priorities, and alternative solutions; to identify applicable structural code requirements and the degree to which compliance would be advisable or necessary; and to provide an analysis of structural loads and an evaluation of further necessary seismic strengthening. As part of this work, the structural engineer was also asked to review the existing soils report, conduct a visual inspection of the building exterior, and to recommend locations for future soil testing.

Forensic Water Infiltration Testing by Independent Roofing Consultants. Independent Roofing Consultants was asked to investigate and evaluate the roofing and waterproofing in relation to the specific areas of study. As part of their investigation and evaluation, the subconsultant was asked specifically to address the general condition of the roof, the remaining serviceable life of the roof, and to identify detrimental conditions evidenced on the roof. Based on this investigation and evaluation, Independent Roofing Consultants was engaged to prepare a comprehensive written report summarizing their findings and recommendations, supplemented with photographs and a roof plan. Also included as part of the subconsultant's scope of work was the preparation of a cost estimate to implement the recommendations.

Materials Testing and Crack Mapping Investigation by Smith-Emery Laboratories. Smith-Emery Laboratories conducted a Cracks and Water Leakage investigation for several of the areas of study including the Dining Room, Gallery Room, and Porch area. The objective of the investigation

and testing was to identify the cracks and paths of water intrusion at the ceilings, walls, and roofs and to determine the contents of the subsurface behind the stone-faced fireplace located in the living room Living Room. The methods used for this work were to make measurements using a crack comparator and visual inspection for traces of efflorescence and water stains in the subject areas. The method employed at the Living Room fireplace area was a nondestructive one and a surface ground penetrating radar was used in general accordance with ASTM D6432, *Standard Guide for Using the Surface Ground Penetrating Radar Method for Subsurface Investigation*.

The subconsultant's observations and findings for the three locations studied are merely summarized in the Supplemental HSR; for more detailed information, such as the exact locations of cracks noted, please see the detailed report and photographs included as Appendix F.

Materials Restoration Investigation by Charles Kibby of CK Arts. CK Arts was asked to address the condition of masonry-related issues at Hollyhock House. The scope of this subconsultant's work is limited to decorative masonry components of the interior and exterior of the building (masonry elements that are structural, rather than decorative, such as concrete foundations walls and HCT, are the purview of the Structural Engineer). CK Arts' work for the Supplemental HSR is based on a visual survey of the interior and exterior of the building. Where possible, closer examination of the masonry verified conditions observed from a distance. No intrusive or destructive testing took place, and it should be emphasized that the conclusions drawn from this survey are based upon primarily visual examination. Notwithstanding the limitations of this method, the visual inspection process can be a valuable tool in the assessment of a structure regarding evidence of decorative masonry problems, if they exist.

Fountain Restoration Investigation by Addison Pools. There are two fountains at Hollyhock House, a square one and a round one. They are currently nonfunctional and PR/BOE requested recommendations from its subconsultant, Addison Pools. Of the two fountains, the round one is considered a higher priority, and the subconsultant was asked to focus their assessment and recommendations primarily on this fountain, and to make some more general recommendations for the square fountain based only on a visual inspection. The more detailed assessment of the round fountain is to include a description of what work would be entailed in its future restoration as well as an order of magnitude cost estimate for such work.

AREAS OF STUDY

The following sections each address an individual area of study in detail. For each of the areas of study, a description of the area is provided, followed by a description of the issues in that particular area, a description of the subconsultants engaged to assess the issue and what their scope of work in the area entailed, and a description of the options available to address the issue based on those subconsultants assessments and recommendations.

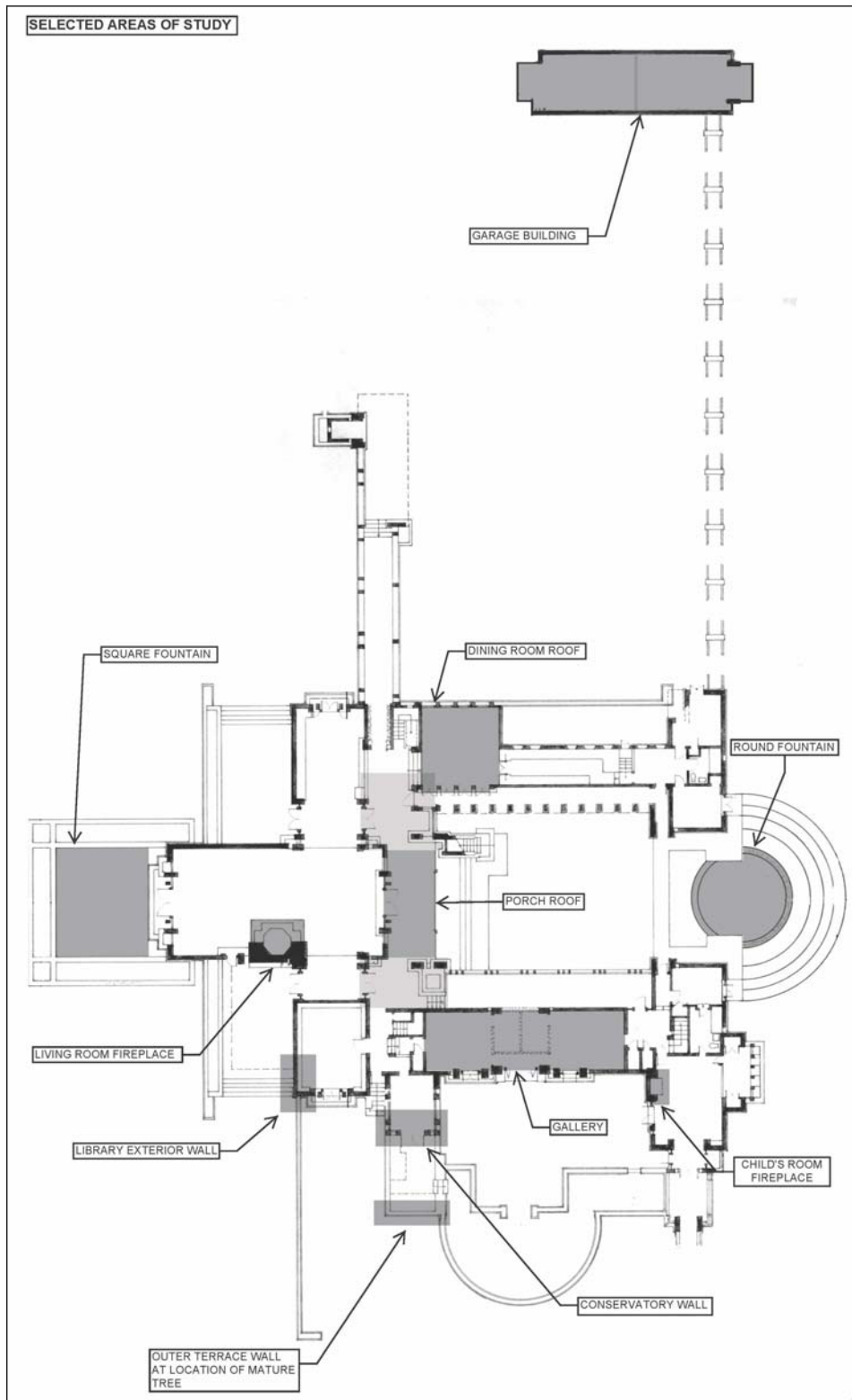


Figure 9: All Selected Areas of Study.

AREA OF STUDY 1: LIVING ROOM FIREPLACE

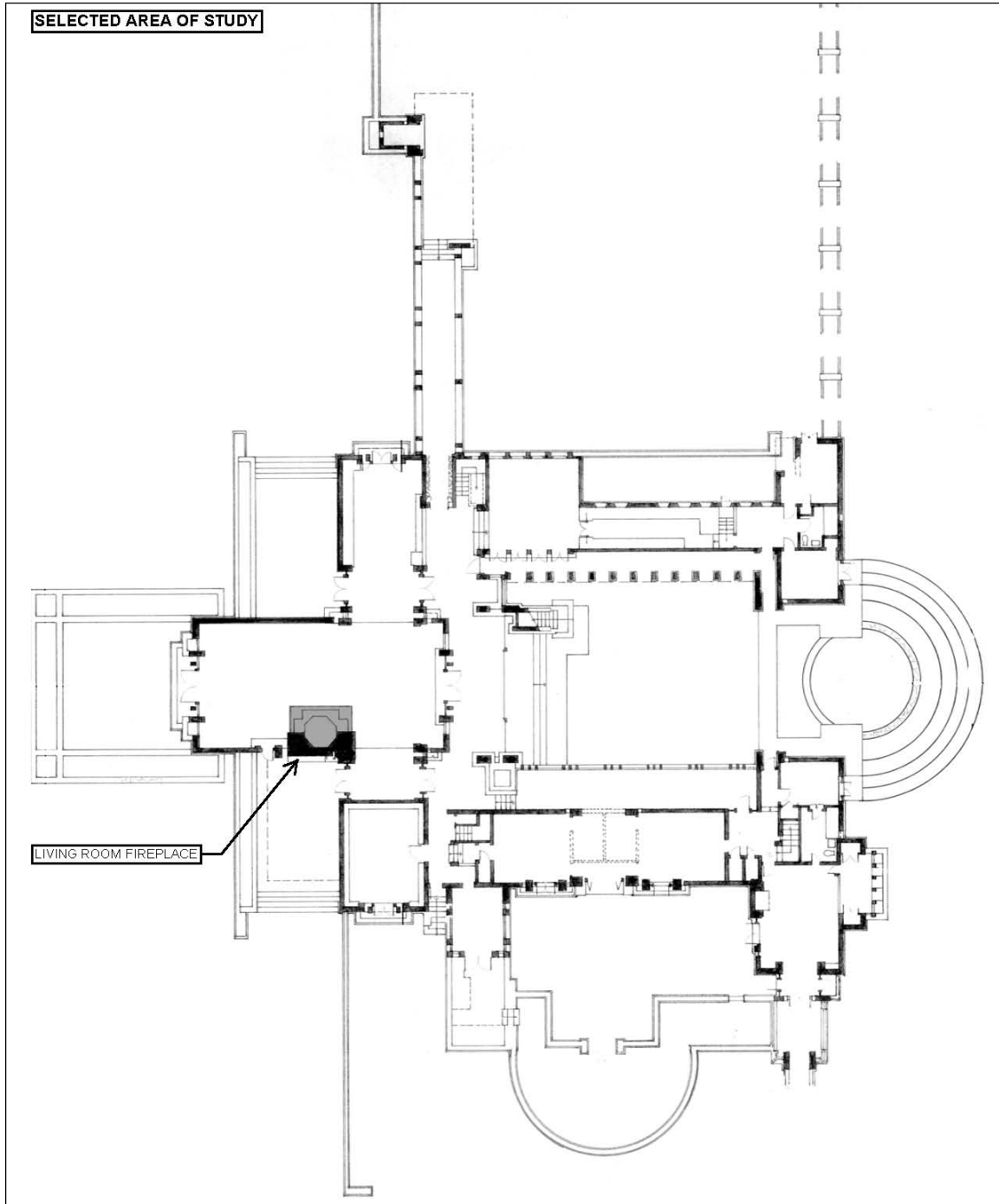


Figure 10: Area of Study 1: Living Room Fireplace.

Area of Study 1: Living Room Fireplace

Description of the Area of Study. The areas of the concern are the fireplace in the Living Room in the interior of Hollyhock House and the chimney on the building's exterior. The Living Room fireplace is a large structure located on the south wall of the Living Room. On the Living Room side there is a mural constructed of large cast stone blocks. The cast stone extends from the floor to the ceiling. The chimney appears as a 12 foot wide by 3 foot 6 inch deep massing at the roof level, matching the size of the fireplace on the interior. In reality, however, the structure observed on the roof is a stucco-finished wood structure with a "normal size" chimney inside.

Description of Issues. The Living Room fireplace is a massive structure of considerable historic importance. The current fireplace assembly and chimney are recognized by the structural engineer as potentially unsound against future seismic activity and worthy of intervention. There are safety concerns about the fireplace foundation and chimney. There is also concern about the mural constructed on the face of the fireplace.

The concern in regard to the foundation is that its embedment into the soil is shallow, perhaps about 12 inches. All the soil on the site has moderate bearing values. Some areas may have been filled without compaction. The bedrock is several feet below the ground surface. The result is less than adequate support for a heavy structure such as the fireplace. This may result in settlement of the foundation, which may be unequal across the width of the fireplace.

The second issue is the chimney. It is constructed of unreinforced masonry. Chimneys of this type have collapsed in past earthquakes. The movement of the chimney in the 1994 Northridge earthquake resulted in a horizontal crack in the stucco enclosure near the roofline on the building's exterior.

The Northridge earthquake also affected the decorative stone mural above the firebox in the building's interior. The cast stone toward the west side of the fireplace shifted during the earthquake. The differential movement varies to a maximum of about $\frac{1}{8}$ inch on the west end of the fireplace.

Description of the Subconsultants Engaged to Assess the Issues. Three subconsultants were engaged in this area of the building to determine the nature of failures related to the fireplace and chimney and how to address them. Melvyn Green, the structural engineer, assessed and made recommendations regarding structural issues associated with both the interior fireplace and the exterior chimney. Charles Kibby, the materials restoration specialist, made recommendations specific to the future repair of the decorative cast stone mural in the building's interior. The work of Smith-Emery Laboratories, the materials testing subconsultant, was limited to the area of the interior decorative cast stone mural and consisted of tests using a ground penetrating radar device to determine its anchorage. The description of the issues and the recommendations made to remedy them, as described here, are both syntheses and summaries of the subconsultant's work as contained in their individual reports. Therefore, before any implementation of the provided recommendations offered in this summary, the individual reports of the subconsultants engaged for this area of the building should be consulted in full as their reports present the issues in greater depth than is possible here. These reports are included as Appendix D (Structural Report), Appendix F (Materials Testing and Crack Mapping Report), and Appendix H (Materials Conservation Report).

Description of Options to Address the Issues. The subconsultants made the following recommendations as summarized below and described in greater detail in Appendices D, F, and H.

- **Foundation.** The foundation for the chimney is founded about 12 to 18 inches into original soils. Under current standards, there is inadequate bearing for the fireplace. The soil could settle differentially under the load of the fireplace in a future earthquake.

One solution would be to underpin the fireplace foundation. This would be done with concrete caissons that extend into bedrock under the existing foundation. A concrete grade beam would connect the caissons together and transfer the fireplace weight between the new caissons.

Another option would be to improve the soil under the foundation. This involves the injection of a cement mix to strengthen the soil and, in effect, create a “soil-cement” foundation. This solution would greatly improve the support for the fireplace and significantly reduce the potential for settlement.

A third option is a “do nothing” option. This option would permit the fireplace foundation to settle in future earthquakes. There is no way to tell whether a future earthquake, similar to the Northridge earthquake, would result in more significant damage, or localized collapse, of the fireplace.

The soil-cement option may be the least intrusive of the options. In any of the fireplace underpinning options, construction access will be required under the building.

- **Chimney.** The fireplace chimney acts as a cantilever above the roof. The exact size of the brick chimney is unknown because it is enclosed within a wood structure to give the appearance of a chimney larger than it is. The mitigation for this is to remove the portion of the brick chimney above the roof and skylight and to construct a new chimney using metal studs. The new chimney would remain within the existing wood enclosure so there would be no visible impact on the building. Other options that were considered would be to physically brace the chimney back to the roof within the wood enclosure if there is sufficient room, or to actually brace it back above the roof. Another solution that was considered is to “center core” into the chimney. However, this solution would also require horizontal ties to hold the vertical bars in place. Therefore, it is not feasible to install the ties as it would require disassembly of the chimney.
- **Cast Stone Mural.** The cast stone mural above the fireplace is not a monolithic slab; instead, it consists of a series of blocks placed together to create a surface that is monolithic in appearance. The blocks that create the mural are attached to the fireplace structure. Typically, in installations such as this, attachment is accomplished with metal connectors of galvanized steel, bronze, or other material. Such connectors are usually located near the corners on the top and bottom of the individual stones. These are usually referred to as veneer ties. The test program by Smith-Emery Laboratories, which used ground penetrating radar devices, found some existing metal ties. However, the test results did not find the expected pattern of anchors at each corner. Some lines indicated metal, and only one horizontal line showed a pattern. It is possible that the anchors from the stone to the fireplace are nonferrous material and do not show up on the test devices. At this point, the tests are inconclusive. Other test methods would require destructive investigation.

In terms of repairing the cast stone mural in the future, it is possible to remove and salvage all the fascia pieces selectively without damaging them if such a program is determined to be necessary. While it may be possible and more desirable to install special support caissons underneath the

existing fireplace in situ, it may be necessary to remove the existing chimney and fireplace from the top down and install a new foundation.

If such a program is initiated, the decorative fascia pieces would be removed by working from the top and inside of the chimney and firebox to cut all metal anchors behind the decorative surface, at the interface between firebrick and HCT and decorative cast stone blocks. They could then be documented and stored until later reinstallation after foundation and flue issues are resolved.

If the decision is made to perform the work without removing existing decorative material, it should be noted that the likelihood of successfully shifting stones to counter the differential movement in the face is minimal. The risk of damaging the historic veneer by applying pressure to an edge or side is significant and would have to be carefully considered before proceeding.

AREA OF STUDY 2: CHILD'S ROOM FIREPLACE

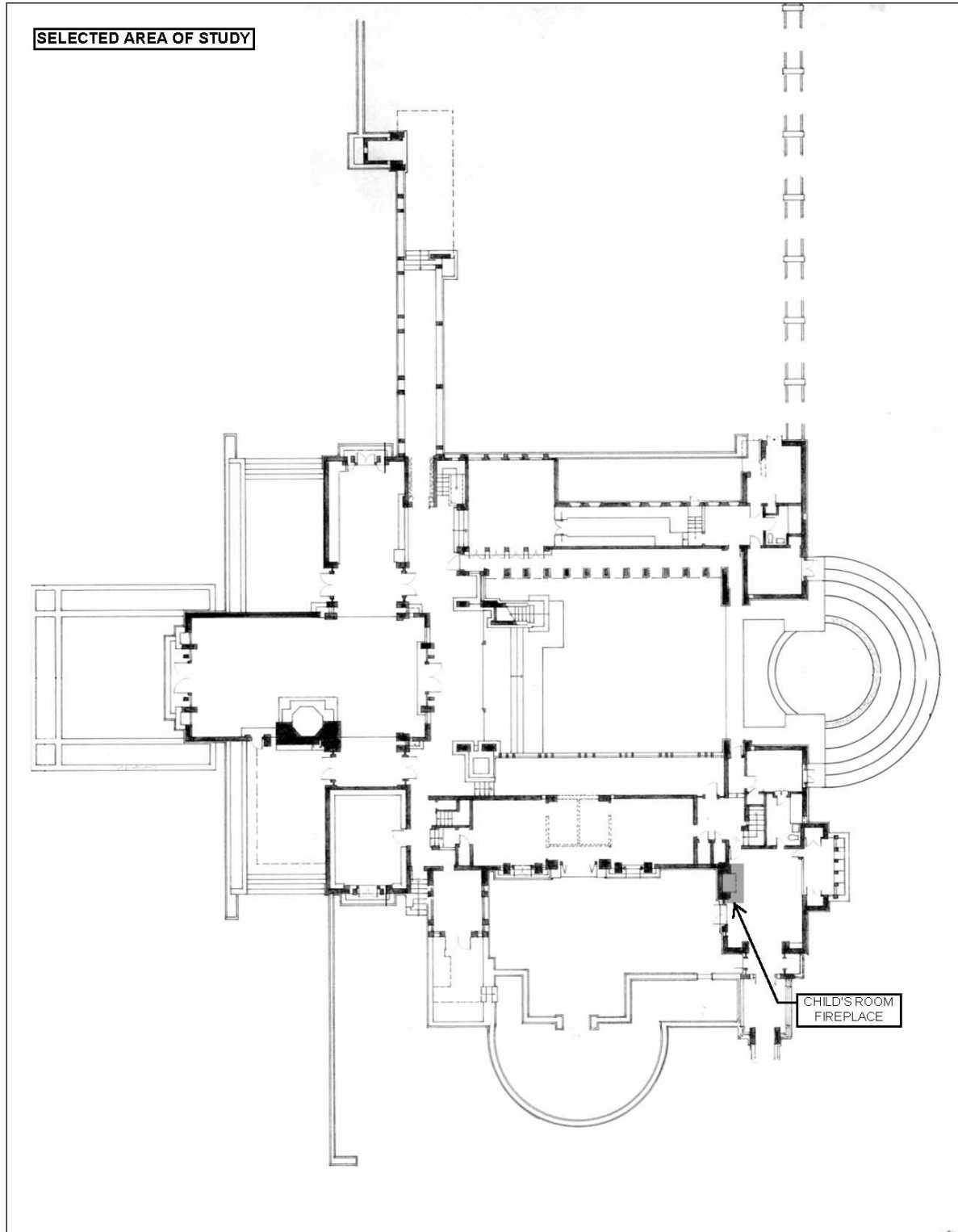


Figure 11: Area of Study 2: Child's Room Fireplace.

Area of Study 2: Child's Room Fireplace

Description of the Area of Study. The Child's Room fireplace, located on the first floor, has a two-story chimney. It includes two flues, one for the first floor fireplace and one for the second floor fireplace. The chimney is similar to that described in the Living Room in that it is enclosed in a wood structure to increase its apparent mass.

Description of the Issues. In the 1994 Northridge earthquake, a vertical crack occurred on the exterior of the chimney. It appears to be along the line between the brick and the wood portions of the chimney. The width of the fireplace is oriented in a north-south direction along gridline 3 in the plan view. The mass of the chimney resulted in lateral movement causing some minor cracks in the wall adjacent to the fireplace. No damage was noted on the decorative facing of the fireplace and hearth.

Description of the Subconsultant Engaged to Assess the Issue. One subconsultant engaged in work in this area of the building. Melvyn Green, the structural engineer, described the structure in this area and made recommendations as to how to address the issue associated with it. The description of the issue and the recommendations made to remedy them, as described here, are a summary of the subconsultant's work as contained in his individual report. Therefore, before any implementation of the provided recommendations offered in this summary, the individual subconsultant's report for this area of the building should be consulted in full (see Appendix D).

Description of Structure. The Child's Room fireplace is smaller than that of the Living Room. No investigation of the foundation or of the chimney has been conducted. The chimney is not accessible as it is enclosed with wood walls similar to the Living Room fireplace. It is safe to assume that the chimney is constructed of unreinforced brick masonry. The chimney for the Child's Room fireplace is much taller than the Living Room chimney.

Description of Options to Address the Issues. The chimney needs to be braced or partially reconstructed. It has a larger mass than the Living Room fireplace chimney as it is a two-story chimney. Bracing is required at both the second floor and the roof lines. (It is possible that there are strap ties at the second floor, but it would require destructive investigation to determine this.) The two options are to reconstruct the chimney from the top of the firebox upward or from the level of the second floor upward. It does not seem possible to only reconstruct the portion above the roof in this location as was suggested for the Living Room fireplace.

Assuming that the program of flue replacement is executed, the use of a pre-manufactured metal flue system seems appropriate as it will reduce the mass and weight of masonry in the existing design. Replacing with newer materials will also allow a firmer attachment to the wood portion of the structure, and eliminate the source of cracking and transferral through the exterior stucco. Existing historic cast stone and brick at the fireplace and firebox would remain in place during this process and be protected and secured as new flue assemblies are installed and anchored.

AREA OF STUDY 3: PORCH ROOF

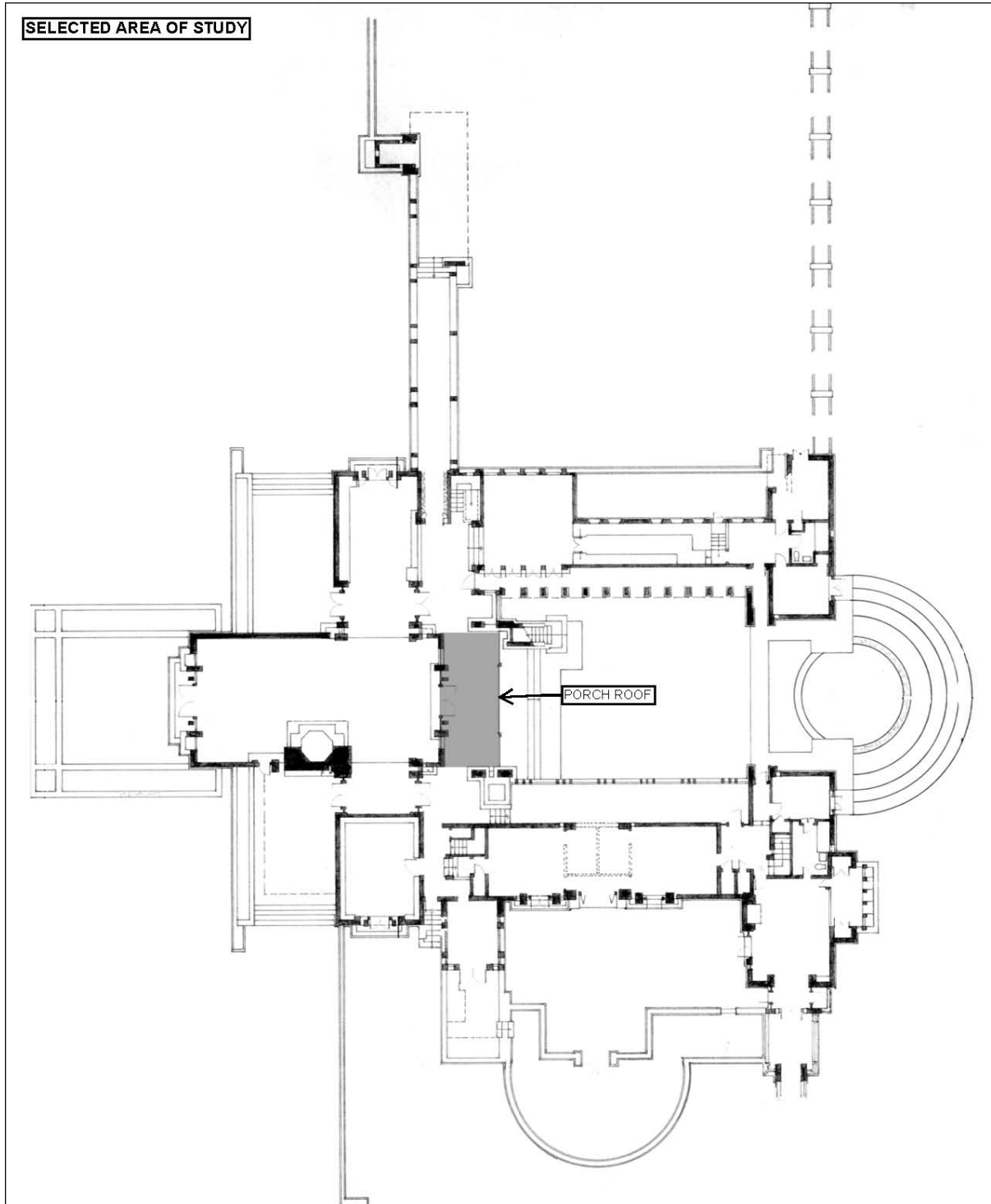


Figure 12: Area of Study 3: Porch Roof.

Area of Study 3: Porch Roof

Description of Area of Study. The current Porch roof to the east of the Living Room was constructed in 1970. The roof surface is a tile finish, probably designed to be walked upon. This roof section consists of 2 × 8 joists spaced 16 inches on center. A cement plaster soffit is supported under the joists. The connection of the joists to the cast stone concrete on top of the wall has not been determined. On top of the joists is a layer of plywood, which forms a substrate for a cap sheet surfaced, organic reinforced built-up roof system. The built-up roofing waterproofing system is covered with a 2-inch thick mortar bed and a glazed tile roof surface tile is placed on top of that. The glazed tile over the mortar bed is approximately ½ inch thick and is intended as a finished roof surface conducive to pedestrian traffic.

The existing cast stone relief units at the spring line of the mansard roof were removed, restored, and later reinstalled at all elevations in the partial restoration of 2001–2000. Work for the Supplemental HSR consisted of exploration of interior flashing systems at the tiled roof area above the central court entry of the house. This exploratory work involved the selective removal of several large cast stone decorative units above the deck area to allow for the investigation of flashing systems installed during the most recent restoration.

Description of the Issue. The Porch roof has been a source of water leakage into the building for many years. The tile roof surface is not historic but was installed some time after the building's original construction. As the finished glazed tile roof surface is not original to the building, there is some question as to whether it should be removed as part of the building's restoration.

Description of the Subconsultants Engaged to Assess the Issue. Four subconsultants engaged in work in this area of the building to determine the nature of the water infiltration in the Porch. Smith-Emery Laboratories conducted a crack mapping effort that was also accompanied by an investigation to determine whether these cracks were potential sources of water infiltration in this area. Independent Roofing Consultants conducted water testing in this area on two separate occasions. On the occasion of the second test, Charles Kibby, the materials conservation specialist, provided assistance by selectively removing some of the decorative cast elements for the roofing subconsultant. The materials conservation specialist also made recommendations for future repair work of materials in this area based upon work as recommended by the structural engineer. Melvyn Green, the structural engineer, described the roofing assembly in this area and made recommendations in regard to the structural roof system that could help to remediate water infiltration in this area. The description of the issues and the recommendations made to remedy them, as described here, are both syntheses and summaries of the subconsultants' work contained in their individual reports. Therefore, before any implementation of the provided recommendations offered in this summary, the subconsultants' individual reports for this area of the building should be consulted as their reports present the issues in greater depth than is possible here. See Appendix D for the Structural Report, Appendix E for the Forensic Water Infiltration Testing Report, Appendix F for the Materials Testing and Crack Mapping Report, and Appendix H for the Materials Conservation Report.

Description of Roofing Issue. There are three primary locations in this Porch area at which leakage into the interior of the Porch occurs. One leak occurs above the interior door frame immediately west

of the exterior courtyard and abutting the interior space of the living room. Plastic sheeting material often needs to be jerry-rigged in this area to prevent water leakages into the interior space from damaging interior furnishings. The roof location that corresponds to this leakage into the interior is the junction between the glazed tile waterproof deck and the abutting exterior wall to the west (where cast art stone decoration is also located). Another source of leakage into the interior is located in the linear space of the Porch walkway adjacent to the first leakage area described. Here, the ceiling evidences this leakage with water stains in cracked ceiling surfaces. Leakage also was reported in a corner of this interior Porch walkway space at the southwest corner.

The drainage from the main glazed tile area is in one corner of the deck. The drainage from this corner occurs through a scupper flashing and into a sheet metal box drain. The box drain also services the adjacent coated waterproofed deck through a small channel gutter. The channel is between the glazed tile and a large copper cover. Joints between the gutter and the copper cover are open and, in the event that this drainage becomes blocked, could allow water entry.

During forensic investigation conducted at the porch roof area, it was determined by the water infiltration specialist that details of the existing flashing were not performing as intended, allowing water to get inside the structure's envelope. This condition was determined by the careful and selective removal of decorative cast stone parapet units to expose the underlying flashing and support system. It was also confirmed during this activity that the decorative cast stone units can be safely removed without damaging the historic surface of the pieces. This is most likely due to the means and methods (softer bedding mortar, passive anchor system) applied during the previous restoration of 2002. This will be significant in the anticipated work to be performed in this area.

Another possible entry point for water into the roof assembly is through the glazed tile of the roof area as there are visible cracks in the tile materials. Additional selective removal was also performed in the central area of the ceramic tile deck above the porch. Examination of the structural interior between roof joists revealed wood decay and confirmed that water infiltration is occurring through the tile. The built-up roofing material beneath the main glazed tile deck area was found open at the test sample location. The roofing material layers were easily separated and the asphalt layers were found brittle. The underlying plywood was completely deteriorated.

Description of Cracks and Water Leakage Investigation at Porch. The cracks and water leakage investigation at the Porch addresses the following three areas:

- **Interior Ceiling.** The Porch ceiling in the location of its north entrance has a horizontal crack approximately 8 to 8.5 feet long and 0.25 to 0.50 inch wide that runs along a joint in the concrete in this location. In the southeast corner of the Porch ceiling, there are cracks running both east-to-west and north-to-south. These cracks measure approximately 20 to 36 inches long and are 0.01 to 0.02 inch wide. At these cracks, there were obvious signs of water intrusion as evidenced by water stains. There are also cracks, which measured 10 to 12 inches long and 0.009 inch wide, occurring at each corner of a lighting fixture bezel in the ceiling. Water stains and efflorescence were also evidenced at the location of the cracks and in the general area of the light bezel. The ceiling at the south entrance to the porch has a crack 5 to 6 feet in length and 0.025 to 0.250 inch in width running in an east-west direction. Traces of water stains and efflorescence were also

observed in this location. The ceiling above the east door entrance has a crack running east-to-west and measuring approximately 10 to 12 inches long with widths of 0.020 to 0.030 inch.

- **Exterior Porch Columns.** To the east side of the Porch, there are concrete columns that separate the enclosure of the interior space from that of the exterior. The southernmost column has horizontal cracks in its surface that lie adjacent to each other at one corner, and a vertical crack extending from one of the horizontal cracks and running along the length of the column at an angle. The cracks measure approximately 36 to 40 inches in length and 0.016 to 0.030 inch in width.

At the northernmost concrete column, there is some cracking at the intersection of the column and the ceiling surface. A vertical crack that runs along the length of the column continues up to the surface of the ceiling. The crack measures approximately 24 to 32 inches in length and 0.010 to 0.050 inch in width. There is some spalling evidenced at several spots along the length of this crack and evidence of water intrusion.

- **Exterior of Porch Roof.** The roof deck that covers the area of the Porch contains numerous cracks running in all directions. These cracks range in length from approximately 2 to 5 feet long and 0.030 to 0.100 inch in width.

Description of Forensic Water Infiltration Testing. Portions of the roof associated with leakage in this area were water tested by the subconsultant, Independent Roofing Consultants, on April 23 and June 3, 2009. On the occasion of the second water test at the building, the masonry conservation specialist lent assistance to the work of the roofing subconsultant by safely removing decorative cast stone units. It was necessary to remove these decorative cast stone elements for the duration of the second water test to further determine the source of water infiltration in this location. The units that were removed were temporarily stored in the garage.

In the first water test, the drain and the overflow drain on the upper roof area were water tested near one of the primary leakage locations for over an hour without any water entry confirmed. During this water test, the primary drain was the main focus of the test. While the primary drain was being tested, some water exited the overflow drain. Drips could be heard in the wall during the initial phases of this test and could have been associated with the water entering the overflow drain. No water was found inside the building due to the testing of the drains. Therefore, upon the recommendation of the subconsultant, Independent Roofing Consultants, PR/BOE determined that more intensive testing of the area should occur in a second water test.

The second water test involved testing of the wall that abuts the glazed tile of the Porch area to the west (and that separates the Porch area and the Living Room in the building's interior). In order to conduct this test, selective removal of the cast art stone in place at the base of the wall was necessary. This selective demolition was performed using techniques and knowledge gained by the subconsultant during his previous work to remove the cast art stone at the building in 2001. As part of the current selective removal, three large 'B' units and one large corner unit of the cast art stone were removed using a progressive technique that involves the drilling of numerous holes in the grout lines between cast stone units. Drilling these 1/4-inch diameter holes has the effect of weakening the grout bedding system between masonry units so that they may be removed without damage to the units. Further careful disturbance of the mortar setting bed was achieved by using a light Italian Cuturi

carving hammer with a custom-made cape chisel to remove joint and setting-bed mortar and to loosen the cast stone unit in place.

Since the mix design used in the 2001 restoration was specifically designed to be 'softer' than that originally used, the cast stone units were removed with ease. Removing these units in the previous restoration had been difficult because very hard 'neat' cement had made removal problematic without damaging the historic fabric. Consequently, the four cast stone units removed (3 large 'B' units, and one large corner unit) were taken out with no significant damage, apart from a few 1 cm spalls at the edges of the stones. Even more notable was the removal of one of these cast stone units from between adjacent installed units without working from a corner to ease stress on the historic cast stone decorative units.

Furthermore, since the 2001 restoration had employed the use of a 'passive' anchoring system, the units were not physically attached to the framed substrate, making their removal much easier and without risk of damage than if they were removed from the building as originally installed. The current installation is a 'floating' mortar bed, which safely supports each piece of historic cast stone without the use of anchors that might otherwise penetrate the original cast stone body.

In addition to the cast stone removal, four ceramic tiles were removed from the deck above the courtyard entry to allow examination of the wood framing and membrane components. No unusual conditions were encountered during this removal.

Once the cast stone decorative units were removed from the wall by the masonry conservation specialist, water testing of the wall by the roofing consultant commenced. During this testing, the wall was isolated for testing by masking over the glazed tile at the exposed portion of the counter-flashing. Water testing included the introduction of water above and directly on to the cast art stone decoration that lines the base of this wall as it transitions to the horizontal plane of the roof tile. This testing revealed that water flowed out of the weep holes located at the mortar joints between the cast art stones long after the water testing was stopped. The wall itself remained wet for a long time after water testing. During water testing, there were times when the tile roof area was flooded. Numerous locations of water infiltration through the roof assembly and down into the interior space occurred below, resulting in dripping water. Locations to the interior of the Porch area included light fixtures and cracks in the ceiling. One leak occurred to the left of the interior door located immediately west of the exterior courtyard (and that provides entry into the Living Room from the Porch). Another leak occurred to the right of this door. The leak to the left of the door appears to be due to an open joint in the counter-flashing metal located on the roof above this space. The leak to the right of the door occurs at a place that corresponds to the corner of the glazed tile deck above is speculated to be caused by openings in the transition metal installation.

The leakage that was reported to occur at the location of the interior door (where plastic sheeting is often needed to prevent damage to the interior furnishings) was not simulated during the water testing, despite the occurrence of leakage to the left and right of the door. Leakage was not simulated in this location even after the masking was removed from the surface of the glazed tile so that a strip of tile approximately a foot wide could be water tested in addition to the water testing of the wall. The strip of glazed tile tested did not include an area of the glazed tile that contains a small crack, an area that corresponds to a location left of the interior door between the Porch and the Living Room in the interior space below. Most likely, this cracked area in the glazed tile is the point at which water enters the roof assembly and results in the leakage at the interior door in the space below.

Description of Options to Address the Issue. The subconsultants made the following recommendations as summarized below and described in greater detail in Appendices D, E, F, and H.

- **Roofing.** The waterproofing observed under the main glazed tile roof section is in a failed condition and the extent of damage and deterioration indicates that work for this area should occur immediately. The leakage in the interior space of the porch below should occur very close to leak openings because there are few surfaces that will allow the water to travel once it has breached the waterproofing layer. Numerous leaks observed during the water testing confirm system failure. It is noted that system failure has also resulted in deteriorated substrate materials and other possible project ramifications. Once a replacement substrate for waterproofing/roofing is provided, it is recommended that a long-term roofing solution be implemented. The recommended installation is a 215 mils thick reinforced hot rubberized asphalt waterproofing system for this project.

Successful remediation work on this area will necessitate the removal of the art stone adjacent to this roof section in order to access the flashing areas. The removal of the existing sheet metal flashing behind the art stone is necessary to tie-in a new flashing at the waterproofing elevation. Tie-in should occur in the stucco wall above where the sheet metal reglet is located. The installation of stainless steel flashings is recommended in order to avoid rusting of the flashing materials as is occurring currently. Waterproofing of the sheet metal flashings is also highly recommended regardless of whether stainless steel is used or not. Additional drainage for this section and adjacent sections of the roof should also be considered.

- **Temporary Removal of Historic Materials at Porch Roof for Remedial Work.** It is important to remove enough existing building fabric to allow for the installation of a proper and watertight membrane above the roof and Porch area. Removal of historic cast stone units to redress flashing and waterproofing details is feasible without inflicting significant damage to the existing decorative cast stone components of the façade. The existing cast stone parapet units should be carefully removed and documented prior to storage. The existing roof tile area should be stripped to structural elements such as joists. Following structural upgrades recommended by the structural engineer, a new and durable roof should be installed, taking into account the design agenda. If a new roof is desired without the tile surface, a simple and durable waterproof surface can be installed over an upgraded plywood subsurface. Photographic documentation shows that roof tiles were not part of the original design of the Porch Roof but an early addition made sometime before 1925.

If the design intent is to cover the area with tile, it will be possible to cover the area with lighter-weight materials (e.g., backer-board instead of 2-inch cement slab) and still use ceramic to function as the primary surface. The previously removed cast stone units can then be reinstalled after all flashing and waterproofing is completely upgraded. Removed cast stone elements can be reinstalled with little or no difficulty. The nonhistoric ceramic tile surfaces, however, will not be able to be saved and should be considered expendable in the effort to redress water penetration issues in this area of the house.

- **Structural.** The framing of this building is light. In this case, the joists are subject to a heavier than normal dead load. Calculations indicate possible excessive deflection under dead load. Wood also has a tendency to “relax” over the years and deflect more than anticipated. If it is decided to retain the deck, it may be possible to add an additional joist between the existing joists. A new

layer of plywood should be installed. The concrete substrate for the tile could be sloped to provide positive drainage away from the building into the yard.

Moreover, while the tile roof surface is intended to accommodate pedestrian traffic, only occasional foot traffic should be permitted on the roof in the future. Calculations indicate that the total allocable dead plus live load is 41 pounds per square foot (psf). The dead load is 30 psf leaving about 11 psf for live load. The minimum roof live load is 20 psf. Public use of the porch roof would require a 100 psf live load, for which the porch roof is not designed.

AREA OF STUDY 4: DINING ROOM ROOF

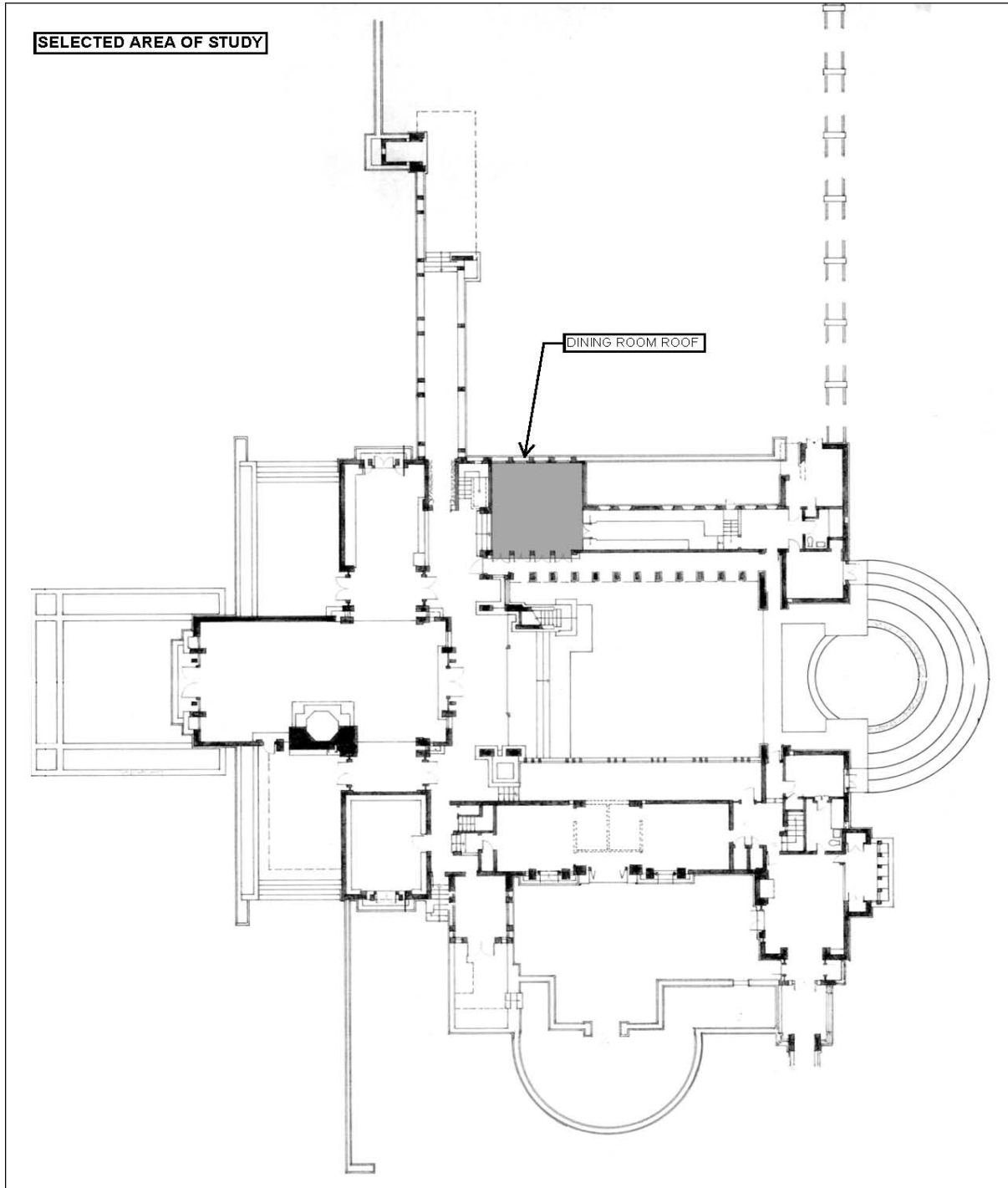


Figure 13: Area of Study 4: Dining Room Roof.

Area of Study 4: Dining Room Roof

Description of Area of Study. The area of concern is the exterior plane of the roof covering the interior space of the dining room. The dining room roof is flat.

Description of the Issue. The minor deflection of the roof rafters in this area leads to areas of ponding on the roof. Subsequently, this ponding on the roof has resulted in some rain water leakage into the interior of the Dining Room.

Description of the Subconsultants Engaged to Assess the Issue. Two subconsultants engaged in work in this area of the building to determine the nature of the water infiltration in the Gallery. Smith-Emery Laboratories conducted a crack mapping survey to determine possible sources of water infiltration in this area and Melvyn Green of Melvyn Green and Associates made structural recommendations as to how to address the issue. The description of the issues and the recommendations made to remedy them, as described here, are both syntheses and summaries of the subconsultants work contained in their individual reports. Therefore, before any implementation of the provided recommendations offered in this summary, the subconsultants' individual reports for this area of the building should be consulted in full as their reports present the issues in greater depth than is possible here. See Appendix D for the Structural Report and Appendix F for the Materials Testing and Crack Mapping Report.

Crack and Water Leakage Investigation for Interior Ceiling, Interior Walls, and Exterior Roof. The crack and water leakage investigation made the following findings as summarized below.

- **Interior Ceiling.** The Dining Room interior ceiling ridge has a crack approximately 14 feet in length that runs from east to west. The crack varies in width from approximately 0.01 to 0.03 inch. There is sagging of the ceiling at the location of the wood trim and apparent signs of water damage that are the result of another crack approximately 4 inches in length and varying in width from approximately 0.50 to 0.75 inch. In the northeast corner of the ceiling, there is a crack approximately 23 inches in length and approximately 0.02 inch wide.
- **Exterior Walls.** There are three walls enclosing the space of the Dining Room that have exposure to the exterior and are therefore the most likely sources of water infiltration. These walls are located to the south, north, and west. The east wall is entirely interior to the building as it abuts the space of the kitchen and is therefore an unlikely source of water infiltration into the interior space. All three of the walls with exterior exposures were surveyed for cracks and evidence of water infiltration as described below.
 - **South Wall.** The south wall of the Dining Room near the wood steps has a vertical crack in the location of the wood trim that is approximately 13 inches in length and varies in width from approximately 0.010 to 0.030 inch.
 - **North Wall.** The Dining Room north wall has a vertical crack measuring approximately 12 inches in length and 0.016 inch in width near the wood steps.

- **West Wall.** Between the small windows on the west wall of the Dining Room, there is a crack running at an angle that measures approximately 7 inches long and 0.016 to 0.020 inch wide.
- **Roof North Parapet.** The Dining Room roof north parapet has numerous vertical cracks with lengths of approximately 36 to 48 inches and widths of approximately 0.010 to 0.016 inch located along it every 4 to 5 feet.
- **Roof South Parapet.** The Dining Room roof south parapet has vertical cracks approximately 36 to 48 inches in length and approximately 0.010 to 0.016 inch wide along the wall every 4 to 5 feet.

Description of Options to Address the Issues. The roof covering should be removed and some “ripped” sloped pieces of 2x material should be installed to provide roof slope and drainage. Another layer of plywood would be placed on these ripped joists and covered with a new roof covering. The system should be shallow enough to not be visible from below.

AREA OF STUDY 5: GALLERY

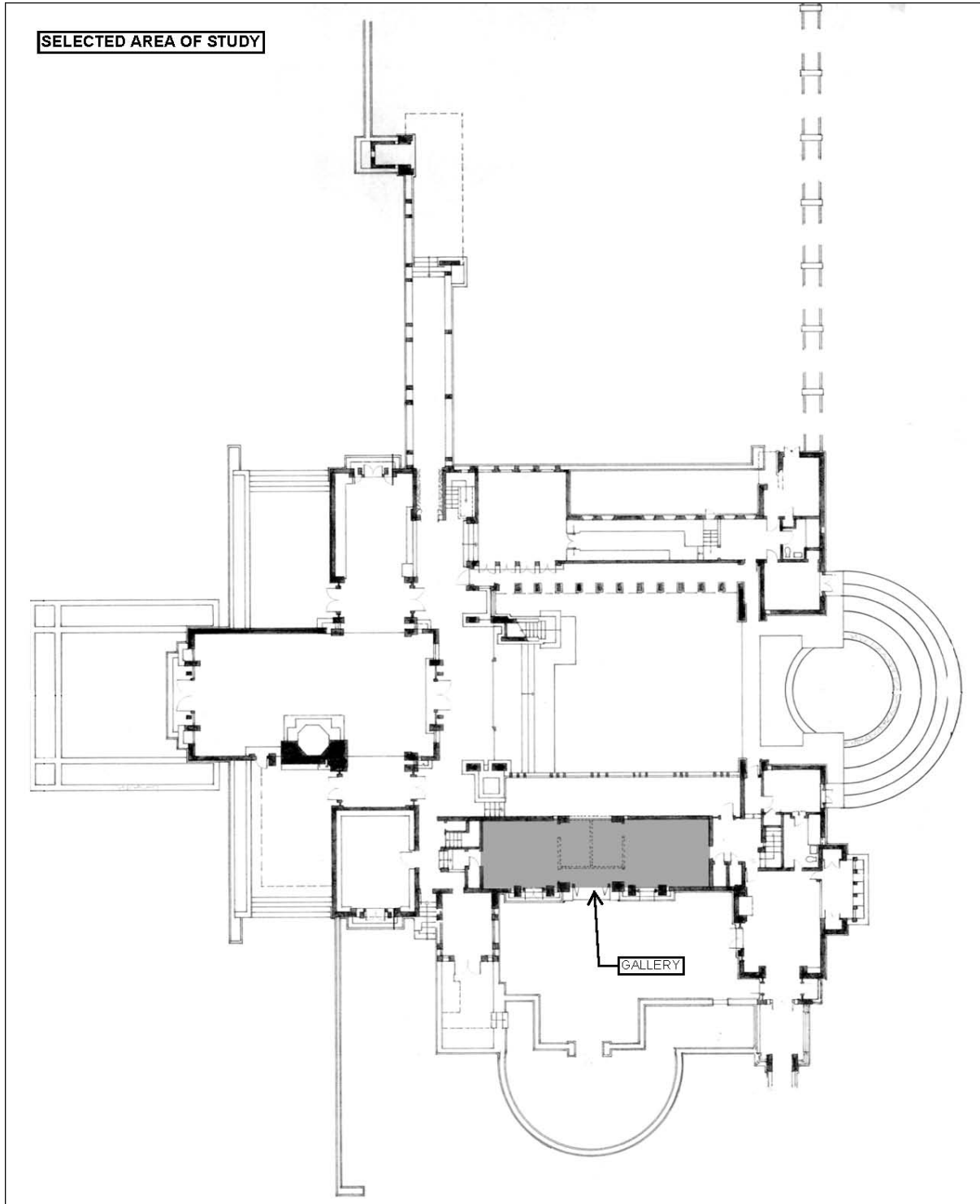


Figure 14: Area of Study 5: Gallery.

Area of Study 5: Gallery

Description of Area of Study. This area is a long rectilinear area located to the south of Hollyhock House and abutted by a large glazed area to its north. Both the exterior and the interior of this space comprise the area of concern.

Description of Issues. There appears to be water leakage in this area either due to water infiltration through cracks in the walls or through the roof assembly. Leakage was reported in particular at the interior lintels of the window openings on the south façade. This is also the location where a transition occurs between original wall material and newer wall materials constructed in 2002.

Description of the Subconsultants Engaged to Assess the Issue. Two subconsultants engaged in work in this area of the building to determine the nature of the water infiltration in the Gallery. Smith-Emery Laboratories conducted a Crack and Water Leakage Investigation crack and water leakage investigation in this area and Independent Roofing Consultants conducted a survey of the roofing and waterproofing. The description of the issues and the recommendations made to remedy them, as described here, are both syntheses and summaries of the subconsultants work contained in their individual reports. Therefore, before any implementation of the provided recommendations offered in this summary, the subconsultants' individual reports for this area of the building should be consulted in full as their reports present the issues in greater depth than is possible here. See Appendix E for the Forensic Water Infiltration Testing Report) and Appendix F for the Materials Testing and Crack Mapping Crack Report.

Description of Cracks and Water Leakage in the Area of the Gallery. This section is intended only as a summary of the cracks identified in this area. The area of investigation for cracks and water leakage into the building included the interior walls, interior ceiling, exterior walls, exterior roof overhangs, and the roof of the Gallery. All of the cracks were mapped on floor plans and measured in both their length and width in the report of the subconsultant responsible for preparation of the Crack and Water Leakage Investigation, Smith-Emery Laboratories (see Appendix F).

- **Interior Walls.** The interior walls of the Gallery are covered with wood panels. Thus, observation for cracks was not possible.
- **Interior Ceiling.** The interior ceiling ridge has eight cracks, approximately 36 to 48 inches long and approximately 0.010 inch wide, running perpendicular to the ridge.
- **Exterior, North Wall.** The exterior north wall of the Gallery west of the door opening has a horizontal and vertical crack measuring approximately 10 to 24 inches long and 0.010 to 0.016 inch wide above a window. On this same wall, there is also a vertical crack measuring approximately 6 to 7 feet in length with widths ranging from 0.010 to 0.025 inch. There is also a horizontal crack of approximately 28 inches in length with widths ranging from 0.010 to 0.040 inch above the concrete steps. There were also apparent signs of water intrusion through this crack as traces of efflorescence and water stains were noted. There is also a vertical and horizontal crack measuring approximately 20 to 38 inches long with widths of 0.100 to 0.750 inch on the north exterior wall east of the door opening and located between two windows. Here, there were also apparent signs of water intrusion through the cracks as evidenced by traces of efflorescence and water stain.

- **Exterior, Roof Parapet Walls.** The Gallery north and south roof parapet walls both contain a vertical crack of approximately 20 inches in length and a width of 0.009 inch below the galvanized sheeting.
- **Exterior, Overhang on South Façade.** The exterior overhang of the gallery on the south façade has a horizontal crack of approximately 36 to 40 inches in length and ranging from 0.250 to 0.750 inch in width. There is sign of water intrusion through the cracks from water stain and traces of efflorescence. There is also a horizontal crack approximately 4 to 5 feet in length and ranging in width from 0.250 to 0.750 inch on the underside of the overhang above the south door entrance. There are also signs of water intrusion in this location.

Description of Roofing. The roofing above the Gallery area is an Elastomeric Deck Coating (also referred to as “Waterproofing”). The Elastomeric Deck Coating system appears to consist of a urethane traffic coating system applied to the plywood roof substrate. The system appears to comprise two base coat layers: a top coat layer embedded with sand and another top coat layer applied over the sand.

On the roof, the location where walls original to the building terminate is clearly demarcated as walls below the roof areas are original and walls above the roof appear to be from construction on the building in 2002. Wall waterproofing occurring at the transition between the original and newer walls appears to be a source of water intrusion to the building, and this appears to be the case at the location of the Gallery.

The thickness of the Elastomeric Deck Coating was found to be good at a sample cut location. The base coats were approximately 60 mils thick. A substantial amount of the aggregate in the surfacing layers appeared worn away; however, embedded aggregate still exists, as seen at the test sample cross-section.

Numerous high nail punctures through the waterproofing system were identified. While the plywood underlying the deck coating is deteriorated at the high fastener at the test sample location, no roof leakage was reported at this location. A couple of locations were found where cuts had been made into the waterproofing membrane and several isolated splits were also found. The splits appeared to occur over joints in the plywood substrate. Ponding areas also appeared to exist on the waterproof deck areas. These areas appear to be caused by accumulations of debris on the deck.

Description of Options to Address the Roofing Issue. The current performance of the Elastomeric Deck Coating is of serious concern. While the installation of the deck coating and the attachment of the plywood substrate appear proper and the thickness of the system is considered good, splits were found to be developing in the coating. Moreover, the ring shank nails used to attach the plywood substrate appear to be backing out from the deck coating, which is causing punctures in the waterproofing system. Excessive building and substrate movement could be the cause of these types of deficiencies, and signs elsewhere of building movement, such as cracking in stucco walls, indicate that this could be the case. There are three different work priorities that should be considered in remedying the issues at the roof. Ideally, a combination of all three work priorities would be combined to best address the water infiltration issues through the roof assembly. In addition, there are several recommendations made as to long-term maintenance of the roofing assembly.

Extensive repairs of the waterproofing deck coating are immediately necessary at a minimum. These repairs would address each of the individual observations regarding the deck coating installations. In

some instances, repairs to the roofing will be need to be recurring and ongoing as roofing issues caused by excessive building movement will continue to present themselves.

After the immediately necessary repair of all individual items, the installation of additional coating and surfacing layers should be considered. The maintenance of coating and surfacing treatments of a kind similar to the current installation should be anticipated to occur on a 5 to 7 year schedule.

In lieu of implementing the above two options, the replacement of the current waterproofing system in its entirety is also a possible solution. It is important to keep in mind, however, that any exposed, surface-applied system will require a maintenance program similar to that necessitated for the existing system (i.e., recoating/resurfacing every 5 to 7 years). Longer-term solutions that require less maintenance than the current waterproofing system could also be installed. Such longer-term solutions are called protected systems. A protected system could consist of an overburden such as a mortar bed and tile or it could consist of removable pavers. Many waterproofing options exist for protected waterproofing installations; however, the roofing subconsultant's recommendation for this particular project is a 215 mils thick reinforced hot rubberized asphalt waterproofing system. This waterproofing system should be able to perform as least 20 years although it is anticipated that, in actuality, it would perform much longer.

In addition to the options to remedy the roofing issues as described above, it is also important to note that there are some concerns about the drainage of the waterproof deck (in the specific area of the Gallery as well as the others where such a system is employed). The installation of new drains also should be explored in the future in an effort to reduce or eliminate ponding conditions on the roof.

Description of Options to Address the Cracking and Water Infiltration Issue. The building has been subject to extreme movement in the past, such as during the 1994 Northridge earthquake, and it continues to be subject to more mild but prolonged building movement caused by factors such as building settlement. The intent of engaging a subconsultant to perform an investigation of cracks and water leakage was merely to determine the extent and location of crack occurrences and to note where evidence of water infiltration was present. No recommendations are being made at this time about how to address the occurrence of cracks in the walls or the infiltration of water through them.

AREA OF STUDY 6: LIBRARY EXTERIOR WALL

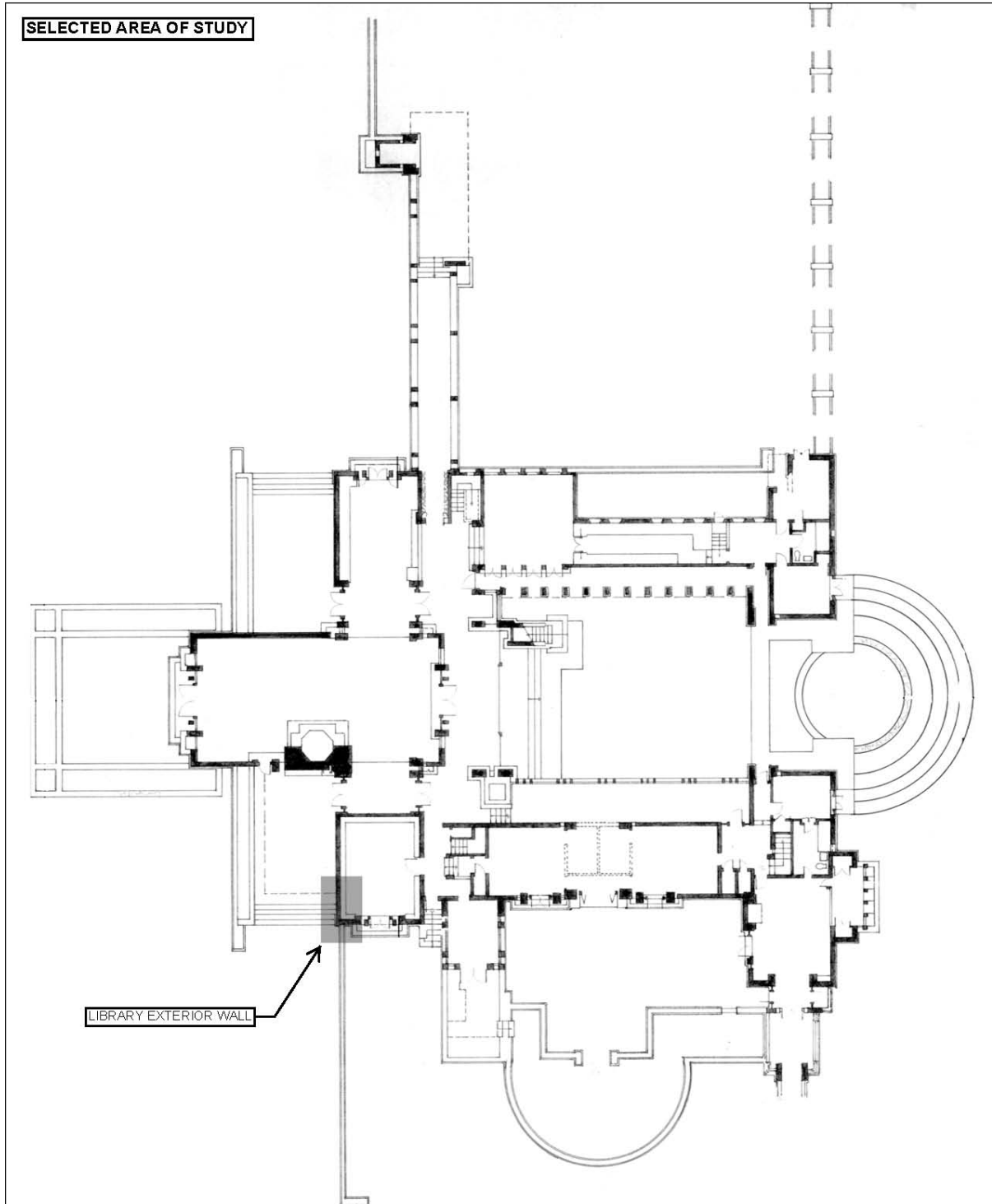


Figure 15: Area of Study 6: Library Exterior Wall.

Area of Study 6: Library Exterior Wall

Description of Area of Study. The Library exterior wall that is the area of study is the south façade. This section of the building consists of a continuous concrete foundation with hollow clay tile.

Description of the Issue. At the southwest corner of the Library is a vertical crack extending from the base of the foundation up the wall to below the window frame. This was thought to be a result of the earthquake; however, it appears that there may be settlement at that corner of the Library. A portion of this crack damage was repaired during recent FEMA work but only in its location at the cast stone base and not to the wall itself. The fact that work was previously done in the location of the foundation suggests that there is some foundation failure in this area, such as a cracked footing or settlement, but since the portion of the crack at the foundation was previously repaired, the extent of cracking in this area is unknown. This portion of the repaired crack will likely occur again in the future given the known propensity of the building site for settlement.

Description of the Subconsultants Engaged to Assess the Issue. Two subconsultants engaged in work in this area of the building to determine the cause of the cracking in this location and measures to remedy it. Melvyn Green, the structural engineering subconsultant, assessed the structure in this area to ascertain possible reasons for the building cracking in this location and made recommendations for remedial structural work. Charles Kibby, the materials restoration specialist, assessed and made recommendations in regard to repairing wall materials in this area. The description of the issues and the recommendations made to remedy them, as described here, are both syntheses and summaries of the subconsultants work contained in their individual reports. Therefore, before any implementation of the provided recommendations offered in this summary, the subconsultants' individual reports for this area of the building should be consulted in full as their reports present the issues in greater depth than is possible here. See Appendix D for the Structural Report and Appendix H for the Materials Conservation Report.

Description of Options to Address the Issue. One solution is to place additional support under the existing foundation in this area by underpinning this corner of the building with concrete. The concrete should extend down to competent material. In addition, the installation of horizontal stainless rods at the $\frac{1}{3}$ points of the walls height should be considered. After concrete placement is complete, the existing cast stone and decorative stucco can be repaired, with the likely end of settlement in this area.

AREA OF STUDY 7: CONSERVATORY WALL

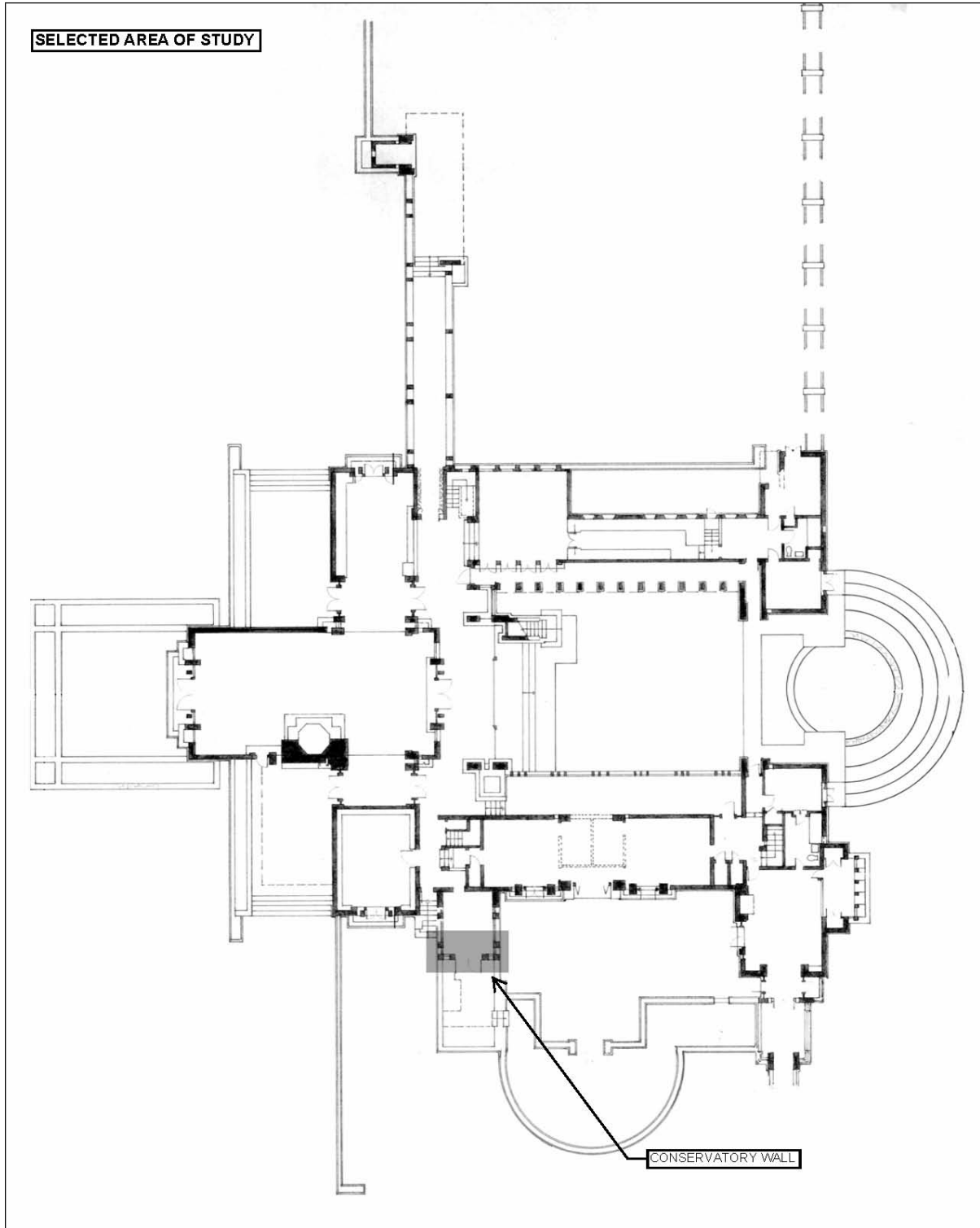


Figure 16: Area of Study 7: Conservatory.

Area of Study 7: Conservatory

Description of Area of Study. This room appears to have been extended southward several feet from what was originally designed and built. Though there is no available documentary evidence to confirm this conclusion, the east wall of this room offers evidence of an extension by the manner in which it was constructed. The modifications to this room probably occurred fairly early and it appears likely that they even may have occurred during the original construction of the building in 1921. Conceivably, as the building was under construction, it was decided that the room was too small as designed and the extension to it was added. That this extension to the Conservatory occurred fairly early is also suggested by historic photographs of the building taken, most likely, during the City's remodeling of the building in the mid-20th century. The exterior walls of Hollyhock House are constructed on a continuous concrete foundation. The foundation is not considered to be deep as it only extends about 12 inches into undisturbed soil. While the foundation for the rest of the building is concrete, the foundation for the southern portion of the Conservatory is constructed of brick. While hollow clay tile was used for all of the building's exterior walls, the portion of the exterior wall that forms the extension to the Conservatory is brick from the foundation up to the underside of the window.

Description of Issue. The issue is a vertical crack that occurs in the east wall of the Conservatory. It is located about 4 feet to the north of the south wall. The crack extends from the floor/foundation to the underside of the window. This area was not previously identified by PR/BOE as an area for study in the Supplemental HSR. However, the crack has been noted for a number of years and was discussed in the original HSR on Hollyhock House. Therefore, one of the subconsultants engaged in work on the Supplemental HSR (and who previously worked as a subconsultant on the original HSR) chose to include it within his scope of work as he believed it an important item to address. Thus, it is presented here.

Description of the Subconsultant Engaged to Assess the Issue. One subconsultant engaged in work in this area of the building to determine the cause of cracking of the wall in the Conservatory. Melvyn Green of Melvyn Green and Associates is the structural engineer engaged to assess and make structural recommendations for the Supplemental HSR. The description of the issues and the recommendations made to remedy them, as described here, are a summary of work contained in the Structural Report. Therefore, before any implementation of the provided recommendations offered in this summary, the Structural Report should be consulted in full. See Appendix D for the Structural Report.

Description of Options to Address the Issues. Cracks usually occur between different materials. In this case, the main factor is differential settlement between the two sections of foundation. (Why this occurs on the east wall and not the west is unknown.) A second factor is that the earthquake likely caused some widening of the crack.

AREA OF STUDY 8: OUTER TERRACE WALL AT LOCATION OF MATURE TREE

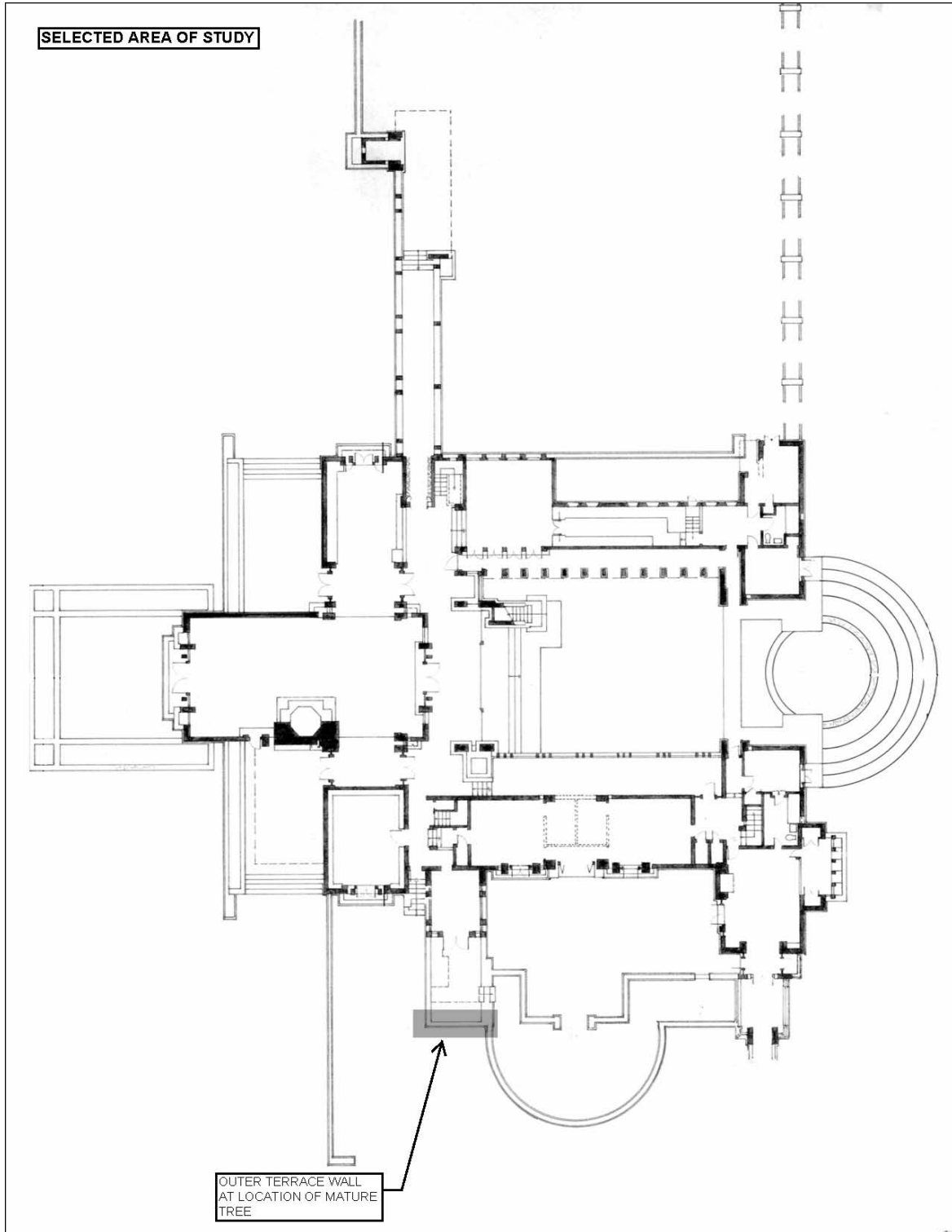


Figure 17: Area of Study 8: Outer Terrace wall at Location of Mature Tree.

Area of Study 8: Outer Terrace wall at Location of Mature Tree

Description of Area of Study. An Outer Terrace wall, varying in height from 5 feet to 6 feet, is located on the south side of Hollyhock House near the Conservatory. The wall is constructed of HCT on a concrete foundation.

Description of the Issue. The roots of a large pine tree located adjacent to the Outer Terrace wall have grown over the years so that they are now lifting up the wall. The roots are putting increasing pressure on the foundation of the Outer Terrace wall as they grow, creating displacement in the wall itself. The displacement of the wall is both vertical and horizontal, and vertical cracks are evident in the wall. There is the potential for the wall to collapse at some time in the future. It was noted at the March 5 Job Walk that the crack had grown by approximately $\frac{3}{4}$ inch since the most recent repairs performed to this area in 2002. This was also referenced in the engineer's report as evidence that the displacement issue will continue to be a long-term problem as long as the tree is allowed to remain.

The Outer Terrace wall is an important component in the original design of Hollyhock House, while the tree, according to Hollyhock House curator, does not appear to be part of the original landscape design. The tree does appear to be recorded on a 1927 Site Plan and it is an aesthetically pleasing feature of this small Patio area of the house's exterior. However, as both the Outer Terrace wall and the tree will continue to present an issue in their relationship to one another in the future, a determination needs to be made whether or not to remove the tree as it is not a historically significant feature as is the Outer Terrace wall. In this evaluation, there are several important factors that must be assessed. Not only is there the possible loss of the historic wall at some future time to consider but also the small chance that even the force generated from a visitor leaning against the wall could potentially cause it to collapse given its current condition. Although somewhat unlikely, if this were to occur, it could potentially injure someone. Another factor to consider is the massive size of the tree, particularly its trunk and root system, and its ability not only to continue to cause damage to the Outer Terrace wall but to Hollyhock House itself. The tree is close enough to the building that if it fell during a wind storm, it would probably cause substantial damage to Hollyhock House regardless of the direction of its fall. If the tree fell toward the building, the trunk would cause significant damage to the building. If it fell away from the house, the uplifting roots would do significant damage to the building.

Description of the Subconsultants Engaged to Assess the Issue. Two subconsultants engaged in work in this area of the building to assess the issue of the tree and its effect on the Outer Terrace wall and to identify measures to remedy it. Melvyn Green, the structural engineer, assessed the structure in this area and made recommendations for remedial structural work. Charles Kibby, the materials restoration specialist, assessed and made recommendations in regard to repairing wall materials in this area. The description of the issues and the recommendations made to remedy them, as described here, are both syntheses and summaries of the subconsultants work contained in their individual reports. Therefore, before any implementation of the provided recommendations offered in this summary, the subconsultants' individual reports for this area of the building should be consulted in full as their reports present the issues in greater depth than is possible here. See Appendix D for the Structural Report and Appendix H for the Materials Conservation Report.

Description of Options to Address the Issue. There are two options available to remedy the problem that is being caused by the continued growth of the mature tree at the location of the Outer Terrace wall: the removal of the tree or the rebuilding of the Outer Terrace wall in a manner that can accommodate the continued growth of the tree roots for a limited period of time (before the roots once again present a serious problem to the structural integrity of the Outer Terrace wall). Both of these options are outlined in further detail as follows.

- The first option is to remove the tree and its root system. The loss of the mature tree as an aesthetically pleasing feature of the patio area could be somewhat alleviated by planting a new, immature tree farther from the building and the Outer Terrace wall to provide space for future growth in a manner that does not similarly affect the building. A new tree would replace the shade provided to the area in a few years. This new tree could either be of the same species or could also a species of one of the other trees that previously needed to be removed from the area immediately south of Hollyhock House and that was original to the initial landscape plan. In making the decision whether or not to remove the tree, it is recommended that the services of a tree arborist be sought to determine both the health of the tree and the length of time it is anticipated that the tree will continue to live, as this is information that could aid in making the decision whether to remove the tree. Removal of the tree is the recommendation of the historic preservation consultant, the structural engineer and the materials conservator, because all three consultants are most concerned about the protection of Hollyhock House. If the tree is not removed, it would still be important to trim the tree back from the house, which would reduce the chance of it toppling in a wind storm. However, trimming the tree would not relieve the issue of the pressure upon the foundation exerted by the tree's roots as described above.
- The second option is to rebuild the Outer Terrace wall with a foundation designed to provide for the tree's continued root growth. In this option, the wall could be carefully disassembled, with cast stone units removed first, followed by the demolition of existing HCT and cement stucco, and finally, the selective removal of any cast stone units that might comprise the base. Then, the foundation of the wall would be constructed as a reinforced concrete beam designed with an opening to wrap under and over the existing roots of the tree to permit growth of the roots. After installation of a new reinforced concrete beam foundation in this area, the removed portion of the wall could be reinstalled to match its original configuration and the salvaged cast-stone units reinstalled. However, ultimately, the size of the roots would exceed the size of the opening and would once again put pressure on the foundation causing the problem to resurface.

AREA OF STUDY 9: ROUND FOUNTAIN/SQUARE FOUNTAIN

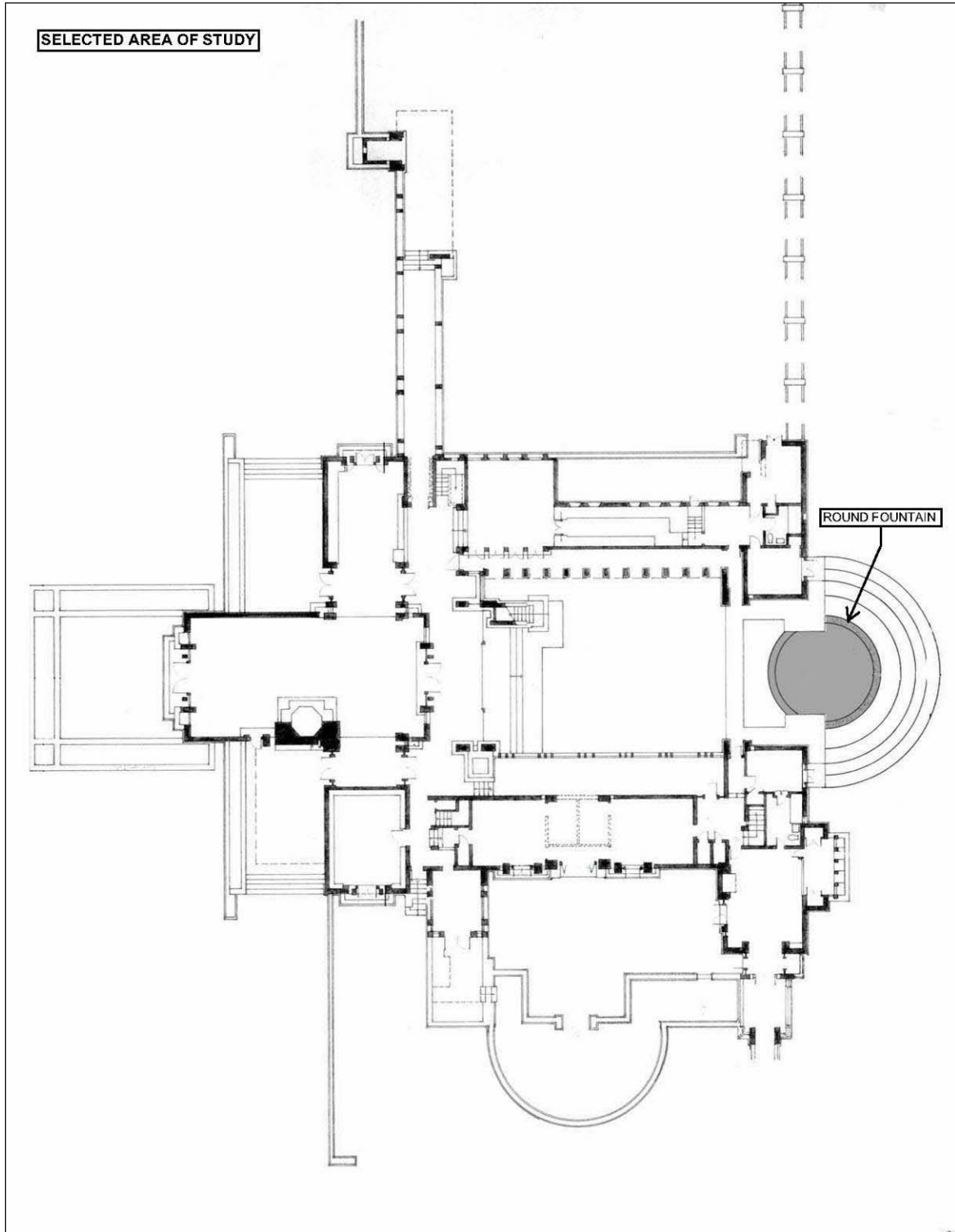


Figure 18: Area of Study 9: Round Fountain.

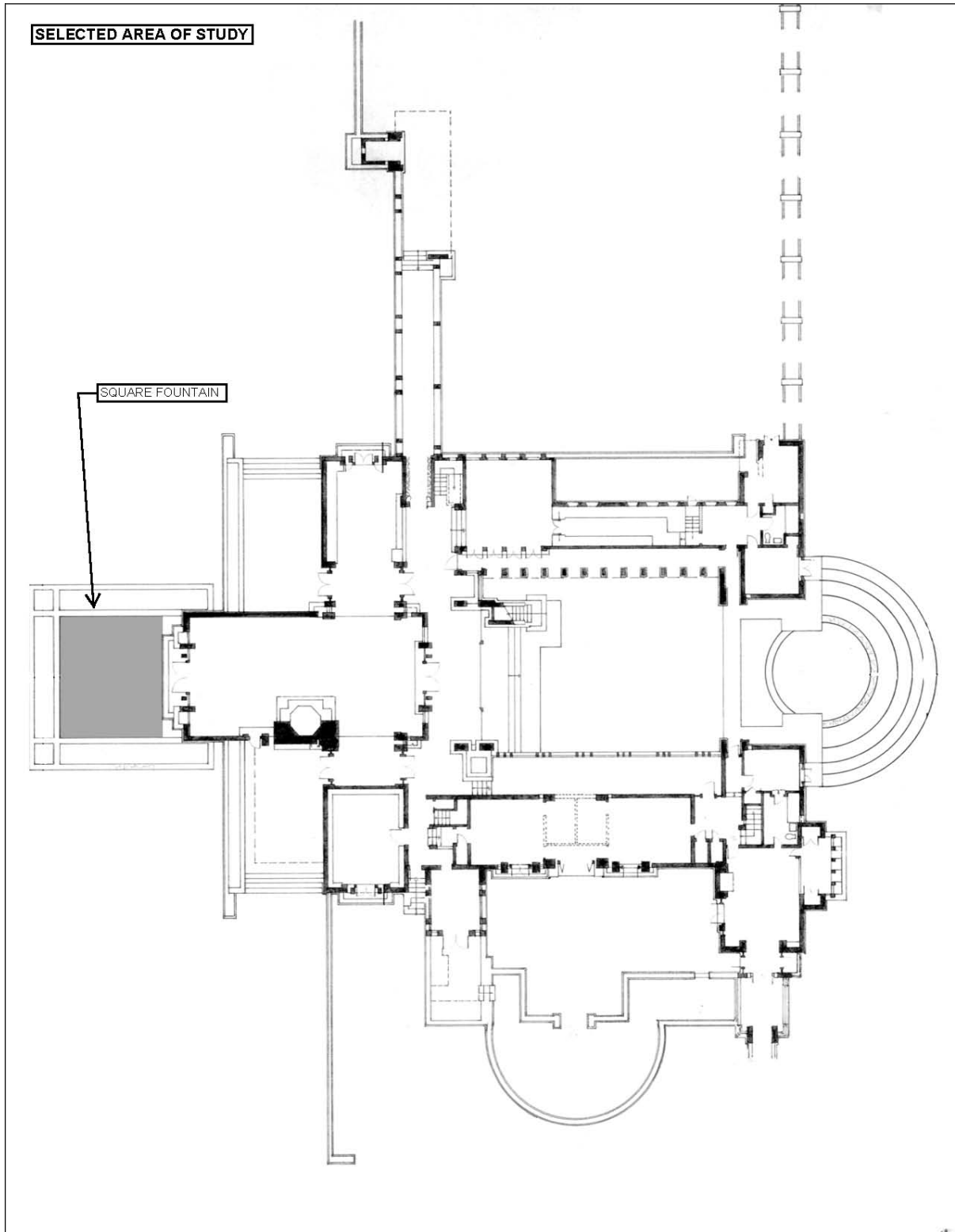


Figure 19: Area of Study 9: Square Fountain.

Area of Study 9: Round Fountain/Square Fountain

Description of Area of Study. There are two fountains that are considered within this area of study. Located on an axis with each other, it is speculated that these two fountains were linked together as part of a single, elaborate water fountain system at Hollyhock House that went under or through the living room wing of the building and may have even been linked to the interior of the house in the location of a interior fountain at the base of the living room fireplace. Therefore, for the purposes of this report, they are treated as a single area of study but separate assessments of their condition and recommendations for their repair are provided. One of these fountains is located to the eastern side of Hollyhock House and is round in shape, and the other is located to the western side of the house and is square in shape, and they are referred to in this report as “round fountain” and “square fountain.”

Description of the Subconsultant Engaged to Assess the Issues. One subconsultant, Drake Addison Woods of Addison Pools, Inc., was engaged as the fountain repair consultant in work in this area. His work entailed assessing the condition of the two fountains in terms of their structural condition, mechanical condition, and aesthetic appearance in an effort to determine the extent to which the original fountains could be repaired to make them functional again and to make recommendations for their future repair/reconstruction. The description of the issues and the recommendations for this area, as described here, are a summary of the subconsultant’s work that is contained in more detail in an individual report. This report is included as an appendix to the Supplemental HSR (See Appendix G for the Historic Fountain Repair Report).

Round Fountain

Description of Round Fountain. The round fountain is approximately 18 feet in diameter, and has a compartmentalized configuration to its interior. A semi-circular area is in the center of the fountain and forms one vessel to hold water, while a larger elliptical area, approximately 30 inches wide, encircles the central area to form another vessel. The total quantity of water held by these two compartmentalized areas of the fountain, when functional, is estimated to be approximately 2,900 gallons. The original design intent of how the fountain was intended to operate in relation to these two compartmentalized areas is subject to some speculation. The circular fountain was designed to flow west through a meandering streambed created along the north section of the abutting courtyard and into the interior of the house, flow into the vessel in front of the fireplace and overflow into the large square fountain at the west side of Hollyhock House, creating an effect of water flowing through the house.

Description of the Issues for Round Fountain. The overall condition of the fountain is poor and it is unable to retain water. It is unfeasible for the fountain to be operational without significant work. The condition of the fountain was assessed in terms of both the existing structural condition and the mechanical condition of its different operational components including piping, electrical equipment and wiring, and its aesthetic appearance. In terms of its existing structural condition, there are several cracks that occur in the fountain both below and above the fountain’s waterline. While the cracks at waterline conceivably could be allowed to remain, the ones below the waterline would allow water to escape into the soils below, further exacerbating the damage already present. The piping in the fountain is virtually nonexistent. A return line appears to feed the basin of the fountain and is perhaps

attached to a submersible pump or to a pump housed in a burial vault adjacent to the vessel. There appears to be no provisions for filtration. There currently is a small feed line that most likely was used for the purpose of filling the fountain. Electrical equipment and wiring for the fountain does not exist. In terms of the fountain's aesthetic appearance, it is a painted concrete surface that is in generally poor condition.

The present structural condition of the round fountain is most likely due to inadequate preparation of soils that support the vessel. At the time of the fountain's original construction, proper compaction of soils and certification were not regulated; thus, no guarantee can be made as to what degree of compaction was provided for the soils that support the vessel. Unless designed for unfavorable soil conditions, structures placed in dirt derive a significant amount of their strength from the soils in which they are founded. If there is uneven compaction or if the vessel is placed on bearing materials of different values (i.e., partially on bedrock and fill), settlement of the supporting soils can occur underneath and around the vessel. Unless the vessel is specifically designed to structurally accommodate uneven support, structural cracking can occur.

The compaction of the soil that supports the fountain vessel is not the only issue. Also, an important factor in the present condition of the fountain is the material from which it is constructed. Without forensic assessment, no guarantee of the materials used to construct the vessel can be made. It is assumed that there is some reinforcing material in the concrete, most likely with steel or wire fabric, and that the concrete the vessel is comprised of has a modicum of strength. However, it is questionable whether the concrete used at the time of construction was designed or tested and also whether any waterproofing agents were used in conjunction with the concrete mix. Constant saturation of the concrete mix may have caused deterioration of the steel support system, further weakening the structure. The reinforcement, if applicable, most likely has deteriorated in the area of the cracks and has no longer has any structural value.

The mechanical condition of the fountain is also an important issue. In regard to piping in the fountain, filtration piping is virtually nonexistent. The condition of any existing piping in the fountain cannot be properly assessed without forensic testing. However, even with testing, it is highly probable that the piping would be found inadequate as the piping, as originally designed, most likely was never efficient, nor was valued from a proper hydraulic standpoint. The replenishment water supply is not suitable for fill, as neither an automatic fill device nor a backflow prevention device is installed as per current Los Angeles City standards. In regard to the overflow piping, connection of the fountain to a sewer or storm drainage system cannot be ascertained without investigation. Piping currently appears to be cast-iron, which may or may not have been installed when the fountain was originally constructed. It is important to note that cast iron pipes typically have a life span that is greatly decreased when chemically treated water is used. Other issues important to assess in regard to the fountain's mechanical condition are in regard to both its electrical power supply and its bonding; however, it is not possible to assess the power supply and, without demolishing the vessel, no assessment can be made as to whether the fountain has been properly bonded.

The condition of the interior surface of the round fountain is currently a painted surface. Paint can be an aesthetic covering which provides a measure of waterproofing as well as a clean smooth and appealing effect. Paint is under duress from chemicals, water, and sunlight and once installed becomes a maintenance factor in that it must be replaced on a regular basis; yearly is not uncommon.

The historic surface of the fountain originally may have been a smooth coat of concrete or plaster type of surface; however, this cannot be determined without some destructive investigation.

There are two mature trees located on the north and south sides of the Round Fountain that have encroached on both the fountain and the east side of the house. There are no trees depicted on the 1927 site plan in the location where the trees are planted, and early photographs of the fountain do not show any trees planted in these areas. Therefore, these trees are not considered part of the historic setting of the house, and their removal would be appropriate in the context of restoring the original setting around the Round Fountain.

Description of Options to Address the Issues for the Round Fountain. One treatment approach for the round fountain is to remove and reconstruct it. Removal of the fountain would only occur after thoroughly documenting its size, shape and elevation landmarks. A new fountain would be constructed to replicate it using modern techniques of construction. This effort would include an evaluation of the historic fountain's aesthetic appearance prior to its removal, a discussion of the intent of the original design, and direction from a qualified historical consultant on how best to proceed with the fountain's reconstruction. A geological assessment of the condition of the soils in the area and recommendations regarding their future stabilization would also be necessary. An evaluation of geological conditions would be performed by a licensed structural engineer/geotechnical engineer and recommendation and plans for the fountain's structural design prepared. Designs for the fountain's hydraulic system, interior finish, and waterproofing design would also need to be proposed and evaluated as part of the overall design of the fountain.

An alternate treatment approach to removing and reconstructing the fountain structure is to perform a structural repair of the cracked areas only. This would include partial demolition of the damaged area (enough to provide a structural splice to the existing steel) and replacement of the concrete in that area. As mentioned previously, the damage to the fountain has likely occurred due to poor soils conditions and this repair will not address those concerns. It may or may not work. Additionally, this repair will show signs of a "cold-joint," or the distinction between the concrete pours, which may or may not influence the aesthetics of the vessel. If the vessel is repainted, the appearance of the joint would be minimal.

An additional alternative treatment to reconstructing the vessel is to fill the cracks in the fountain with an epoxy material in an attempt to "glue" the vessel together. The vessel would then be coated with a fiberglass liner. The fiberglass liner is a flexible membrane that is applied on the existing structure. Because fiberglass is somewhat flexible, it would bridge the cracks and bend rather than crack, maintaining the watertight integrity of the vessel. However, this application of a modern product like modern fiberglass might seriously compromise the aesthetic appearance of the historic fountain, and this is an important factor to consider.

Square Fountain

Description of the Square Fountain. The square fountain is approximately 25 × 25 feet in size and it has a partitioned configuration to its interior, forming two separate vessels that are terraced in relation to each other. The central section is approximately 16 feet. An upper terraced section, approximately 5 feet wide, encompasses this central area. The water quantity that these two vessels together are

designed to contain is approximately 7,000 gallons. The square fountain provided the termination point for a path of water that flowed westward from the Round fountain on the east side of the house, through a meandering streambed along the north section of the courtyard and house, and through the house into the vessel in front of the fireplace before flowing into this fountain.

Description of the Issues for the Square Fountain. The overall condition of the fountain is poor and it is unable to retain water. It is unfeasible for the fountain to be operational without significant work. The condition of the fountain was assessed in terms of both the existing structural condition and the mechanical condition of its different operational components including piping, electrical equipment and wiring, and its aesthetic appearance. In terms of its existing structural condition, there are several cracks that occur in the fountain at, below, and above its waterline. While the cracks at waterline conceivably could be allowed to remain, the ones below the waterline would allow water to escape into the soils below, further exacerbating the damage already present. Additionally, the fountain has cracked and tipped significantly at its south west corner, and it is unable to retain water for any length of time.

The piping in the fountain is virtually nonexistent. There is an overflow line existing from the center of the planter at the east, possibly to accommodate the concept of the interior pond flowing into this vessel. Additionally, there is an antiquated float type of automatic fill device covered by a modern stainless steel housing that is not operational at this time nor is it connected to a backflow prevention device. There appears to be a drain pipe in the center of the vessel that is unable to be assessed without mechanical investigation. Electrical equipment and wiring for the fountain does not exist. In terms of the fountain's aesthetic appearance, it is a painted concrete surface that is generally poor condition.

The present structural condition of the fountain is most likely due to inadequate preparation of soils that support the vessel. At the time of the fountain's original construction, proper compaction of soils and certification were not regulated; thus, no guarantee can be made as to what degree of compaction was provided for the soils that support the vessel. Unless designed for unfavorable soil conditions, structures placed in dirt derive a significant amount of their strength from the soils in which they are founded. If there is uneven compaction or if the vessel is placed on bearing materials of different values (i.e., partially on bedrock and fill), settlement of the supporting soils can occur underneath and around the vessel. Unless the vessel is specifically designed to structurally accommodate uneven support, structural cracking can occur.

The compaction of the soil that supports the fountain vessel is not the only issue. Also, an important factor in the present condition of the fountain is the material from which it is constructed. Without forensic assessment, no guarantee of the materials used to construct the vessel can be made. It is assumed that there is some reinforcing material in the concrete, most likely with steel or wire fabric, and that the concrete the vessel is composed of has a modicum of strength. However, it is questionable whether the concrete used at the time of construction was designed or tested and also whether any waterproofing agents were used in conjunction with the concrete mix. Constant saturation of the concrete mix may have caused deterioration of the steel support system, further weakening the structure. The reinforcement, if applicable, most likely has deteriorated in the area of the cracks and no longer has any structural value.

The mechanical condition of the fountain is also an important issue. In regard to piping in the fountain, filtration piping is virtually nonexistent. The condition of any existing piping in the fountain cannot be properly assessed without forensic testing. However, even with testing, it is highly probable that the piping would be found inadequate as the piping, as originally designed, most likely was never efficient, nor was valued from a proper hydraulic standpoint. The replenishment water supply is not suitable for fill, as neither an automatic fill device nor a backflow prevention device is installed as per current Los Angeles City standards. In regard to the overflow piping, connection of the fountain to a sewer or storm drainage system cannot be ascertained without investigation. Piping currently appears to be cast iron that may or may not have been installed when the fountain was originally constructed. It is important to note that cast iron pipes typically have a life span that is greatly decreased when chemically treated water is used. Other issues important to assess in regard to the fountain's mechanical condition are in regard to both its electrical power supply and its bonding; however, it is not possible to assess the power supply, and without demolishing the vessel, no assessment can be made as to whether the fountain has been properly bonded.

The condition of the interior surface of the round fountain is currently a painted surface. Paint can be an aesthetic covering that provides a measure of waterproofing as well as a clean smooth and appealing effect. Paint is under duress from chemicals, water, and sunlight and once installed, becomes a maintenance factor in that it must be replaced on a regular basis; yearly is not uncommon. The historic surface of the fountain originally may have been a smooth coat of concrete or plaster type of surface; however, this cannot be determined without some destructive investigation.

Description of Options to Address the Issues for the Square Fountain. Due to significant damage to the square fountain as caused by settlement, it is mandatory that any attempt to restore the fountain includes addressing the soils conditions beneath it. The vessel is significantly cracked and is completely out of level. Any attempts at patching or repair from a structural standpoint would be only a temporary solution. Cracking of the fountain would probably re-occur during the first heavy rain from settlement, expansion or movement of the soils. It might be possible to excavate under the existing structure and to provide additional structural support to the vessel by underpinning it, but without knowledge of the exact location of suitable bearing materials, such an approach might be an open-ended proposition for ongoing repair to the fountain.

Additionally, extensive remedial concrete work would need to be done at the surface of the fountain to ensure further leaking does not occur and the cracks are properly filled. For this reason, it is an undesirable method of repair for the fountain and is not recommended. Another option would be to install a fiberglass lining; however, doing so would not remediate the problem unless significant effort was put into leveling and stabilizing the vessel and a fiberglass lining would also significantly compromise the historic appearance of the fountain. Therefore, it is recommended that the entire fountain be removed and reconstructed.

The proper method of reconstruction would entail removing the entire structure only after thoroughly documenting its size, shape, and elevation landmarks. It would then be replaced with an identical structure using modern construction techniques. It is expected that the replacement of the square fountain would require the placement of deep footings founded on competent bearing materials to ensure further settlement does not occur in the future. An alternative to this, however, may be to over-excavate the area of the fountain and re-compact it prior to reconstruction, constructing the new

fountain as a “floating” structure that requires no support from the surrounding soils for strength. However, this is not the preferred method for the fountain’s reconstruction as further settlement may continue and “tipping” of the new fountain shell might occur.

This effort would include an evaluation of the historic fountain’s aesthetic appearance prior to its removal, a discussion of the intent of the original design, and direction from a qualified historical consultant on how best to proceed with the fountain’s reconstruction. A geological assessment of the condition of the soils in the area and recommendations regarding their future stabilization would also be necessary. An evaluation of geological conditions would be performed by a licensed structural engineer/geotechnical engineer and recommendation and plans for the fountain’s structural design prepared. Designs for the fountain’s hydraulic system, interior finish, and waterproofing design would also need to be proposed and evaluated as part of the overall design of the fountain.

Although repair of the existing fountain structure is an option, as mentioned previously, it is not the recommended treatment approach. This fountain is in substantially worse condition than the round fountain, which could conceivably be repaired. However, the recommended treatment approach for the square fountain is to remove and reconstruct it. Such a reconstruction would allow all of the advances in construction techniques that have occurred since the fountain’s original construction to be utilized while still maintaining the essence of the original design. In the fountain’s reconstruction, cements such as a Colton or High-Early could be used and given a “washed” finish that would ensure that the appearance of the reconstruction is that of an “aged” vessel. Reconstructing the vessel would also ensure both a proper bearing material for the fountain and that it is structurally designed to resist cracking. A proper filtration system could be provided and would most likely be placed in an unobtrusive subterranean vault at a satellite location. If plant material were to be used, it could be designed as a biological system that could promote filtration naturally in addition to the mechanical device that would be provided to also work in this capacity. Proper fill and overflow devices could be installed to minimize saturation of the surrounding soils. Lighting could also be considered to enhance the fountain’s appearance.

AREA OF STUDY 10: GARAGE BUILDING

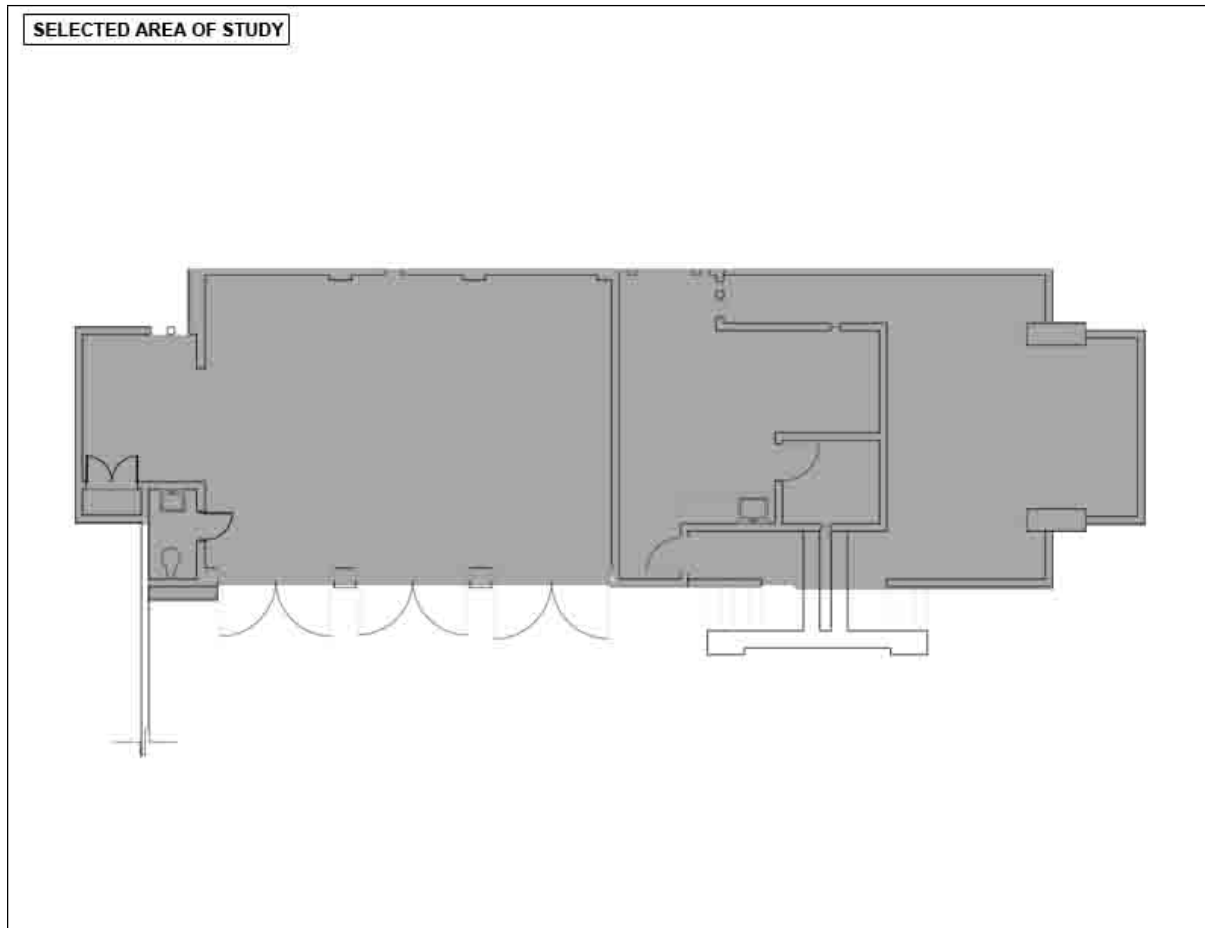


Figure 20: Area of Study 10: Garage Building

Area of Study 10: Hollyhock House Garage

Description of Area of Study. Hollyhock House Garage is constructed on a continuous concrete foundation that supports HCT walls. The roof structure consists of wood trusses over the automobile area. Over the living area, the roof is constructed with conventional rafters and ceiling joists. FEMA repair work previously conducted on the building brought it into full compliance with the Los Angeles Building Code Division 88. The retrofit work consisted of the installation of a horizontal steel truss to act as a diaphragm. The walls are anchored and braced by the horizontal truss system. In the living quarters, the walls are anchored to the plywood or to the straight board-sheathed diaphragm. Between the garage and living quarters there are drag elements to distribute the load and to tie the two halves of the building together. A plywood shear wall was constructed on the wall between the garage and living quarters and extends from the foundation to the roof. Independent supports were placed below the steel beams over the garage openings.

Description of the Issues. For this area of Hollyhock House building complex, PR/BOE is seeking suggestions on how to place the Hollyhock Garage Building into public use in the future rather than continuing its present use as storage. New uses for the two primary spaces of the garage building have not yet been determined, but likely would include among them one first proposed in a *Hollyhock House Garage Historic Structures Report* prepared in 1989 for the City of Los Angeles. This report proposed that a bookstore be placed in the portion of the building that was originally constructed as a garage. The easternmost portion of the building would likely be dedicated to private office use for Barnsdall Park employees in any future re-use scheme as other more public uses in this part of the building present accessibility issues due to the grade changes.

The garage building is an unreinforced masonry structure and it must comply with the Division 88 seismic retrofit provisions. Moreover, while the garage building is an outbuilding of secondary importance in relation to Hollyhock House, it is, nonetheless, an important historic component of the complex. Interior improvements to the building would involve the installation of new and nonhistoric materials. Therefore, as designs for the garage space are developed in the future, they should be carefully evaluated as in an effort to make the new interior design for the garage building comply to the fullest extent possible with the *Secretary's Standards for the Treatment of Historic Properties*.

Description of the Subconsultants Engaged to Assess the Issues. Two subconsultants engaged in work in this area to determine, at a very basic level, what work in the garage building had already been completed in the past, and what considerations would play a role in any future design scheme. Melvyn Green, the structural engineer, previously made recommendations for structural work to this area that was subsequently implemented. Therefore, for the Supplemental HSR, he evaluated what further structural work would be necessary in the building to accommodate a new use. Charles Kibby, the materials restoration specialist, made recommendations in regard to the repair and/or restoration of historic materials. The description of the issues and the recommendations for this area, as described here, are both syntheses and summaries of the subconsultants' work that is contained in more detail in their individual reports. The subconsultants' individual reports for this area of the building should also be consulted and are included as appendices to the Supplemental HSR. See Appendix D for the Structural Report and Appendix H for the Materials Conservation Report.

Description of Options to Address the Issues. There should be no additional structural work required to bring the building into compliance with Division 88 seismic retrofit provisions. However, proposed work to the garage in the future will still need to be evaluated in terms of its compatibility with the historic structure. For instance, if interior alterations are performed, the likelihood is that the existing concrete surface will need to be covered with a new surface material (ceramic tile, etc.) to conform to existing code requirements. This would necessitate covering the existing historic concrete floor with a nonhistoric material, rather than restoring the concrete floor. Such proposed changes to the design of the original historic structure should be carefully evaluated by a professional meeting the *Secretary of the Interior's Professional Qualifications Standards* in architectural history and/or historic architecture prior to the approval and implementation of any design.

There are two options described to address the rehabilitation of the existing garage for public use. The first option details a more basic approach to getting the building to a point where the interiors are finished and ready for a possible future use. The second option takes the scope of work to the next

level with the installation of necessary basic infrastructure to accommodate a bookstore within the garage area. Both options are described in more detail below.

The first option would limit the work on the garage to updating the building shell for public use. Of the work described in this option, the most substantial and possibly the most important work on the garage exterior would be the reconstruction of the three pairs of historic garage doors. There is sufficient historic documentation of these doors (photos and original plans) to allow for their accurate reconstruction. These three pairs of large doors would be reconstructed in accordance with the Secretary of the Interior's Standards for Reconstruction and all work performed would be monitored by a qualified preservation architect. As for the interiors, drywall would be installed over new insulation in the garage area in a manner that maximizes retention of the historic fabric and respects the utilitarian character of interior space of the building. The ceiling of the garage area would be drywalled with a rake to follow the existing lath rather than hung from the underside of the contemporary structural steel so as to maintain the historic high volume and characteristic shape of the garage ceiling. Installing a new finished ceiling in this manner would retain the overall look and feel of the garage while still allowing for it to be functionally reused. While it may be necessary to resurface the floor in the servant's quarters, it is recommended that the existing concrete slab in the garage area remain relatively untouched. Any plumbing or electrical to be installed underneath this concrete slab would be installed in a single trench and the concrete repaired. The trench would then be patched in a manner that maintains a visual distinction between the historic and new concrete. Additional work in the servant's quarters would focus largely on updating the existing restroom facilities. All plumbing and fixtures would either be repaired or replaced and any additional plumbing or wiring would be installed to ensure the restroom is fully operational. The flooring finish in the restroom area, which has a wood framed subfloor, would consist of sheet vinyl or linoleum. In addition to this work, a Soleus air unit would be installed in a location that is minimally visible from the garage area. The plans provided by the Bureau of Engineering detail what measures would be necessary to perform the work described in this option.

The second option would further the scope of work in the garage to convert the existing garage area into a bookstore. As the option detailed above would already put the shell of the garage in nearly working order, further work would be to furnish the interior of the garage area as a bookstore. This work would include installation of infrastructure necessary to support enhanced mechanical and electrical systems, shelving units and casework along the perimeter walls and in the open center area, as well as a sales counter near the entrance. It is recommended that as much of the casework as possible remain mobile so as to minimize alteration to the concrete floor as well as allow for a flexible merchandising plan. It may be necessary to install additional conduit for computer point of sale, inventory and internet access, additional general and display lighting. An additional layer of glazed storefront would be added on the interior side of the three garage door openings. This storefront is conceptually envisioned as contemporary, likely wood framed, infill that would be visually obscured by the closed garage doors. When the facility is open, the garage doors would be opened as well, held by pins in the open position, to reveal the glazed storefront, merchandise and bookstore function. Additional operational analysis and design development would be necessary to document the bookstore option.

RECOMMENDATIONS FOR TREATMENT APPROACHES

This section includes basic recommendations for treatment approaches and priorities. The treatment approaches are focused on addressing problems identified for correction in Phase III repairs. Information provided in these sections are summaries that are based upon reports prepared by the Structural Engineer, Melvyn Green of Melvyn Green and Associates; the Materials Conservator, Charles Kibby of CK Arts, Inc.; the Waterproofing Consultant, Independent Roofing; Materials Testing, Smith-Emery Laboratories; and the Fountain Consultant, International Waterscapes. Complete copies of their individual reports may be consulted in the appendices. Diagrammatic sketches that identify spaces, materials, and/or features of the building and its surrounding site also are provided where necessary.

Future Uses and Treatment Plan

Hollyhock House will continue to be used as a house museum. As such, treatment recommendations will be focused on repairs to existing problem areas in a way that preserves the house's original character and historic materials. The *Secretary of the Interior's Standards for Preservation* will be the primary guidelines to accomplish the recommended repairs.

Secretary's Standards

The following are the guidelines for the treatment approach of **Preservation**:

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.
2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3. Each property will be recognized as a physical record of its time, place, and use. Work needed to stabilize, consolidate, and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection, and properly documented for future research.
4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color, and texture.
7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

IMPLEMENTATION

Next Steps

It is assumed that Project Restore will engage a design architect to implement the Phase III repair project using the funds awarded by the CCHE Grant in 2007. The Bureau of Engineering will also engage General Services to implement structural work outlined in this report, hiring contractors as necessary to perform necessary specialized work. In assessing as built conditions for this report, all work performed by subconsultants was non-invasive. Therefore, in order to complete a more detailed inspection of the as built condition of the building, extensive documentation must accompany any and all work performed as part of the Phase III repair project. In addition, all work performed will be monitored by a qualified preservation architect.

As part of the Phase III repair project the implementation of converting the Garage area into a working space was outlined with two possible options. Although option one deals with a simple treatment for updating and rehabilitating the building shell, the second option details a more extensive program for converting the Garage area into a bookstore that would require further study. Not only would there need to be further research as to how to physically convert the space into a bookstore, it would be necessary to understand how to successfully implement its operation.

Cost Estimate and Preliminary Time Line to Complete the Construction

Phase III repair project has been prepared and is included as Appendix I with this report. This cost estimate was based on the Rough Order of Magnitude dated 5/1/09 provided by LSA as well as subsequent verbal direction from the architect and engineer.

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