

4292

United States Department of the Interior  
National Park Service

# National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form*. If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.



### 1. Name of Property

Historic name: Harrenstein, Dr. Howard Paul, House

Other names/site number: \_\_\_\_\_

Name of related multiple property listing:  
N/A

(Enter "N/A" if property is not part of a multiple property listing)

### 2. Location

Street & number: 6450 North Calle De Estevan

City or town: Tucson State: AZ County: Pima

Not for Publication:  Vicinity:

### 3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,


I hereby certify that this X nomination \_\_\_ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property X meets \_\_\_ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

\_\_\_ national \_\_\_ statewide X local

Applicable National Register Criteria:

A \_\_\_ B \_\_\_ X C \_\_\_ D

 _____ <b>Signature of certifying official/Title:</b>	<u>7/2/19</u> _____ <b>Date</b>
<u>Arizona State Parks and Trails</u> _____ <b>State or Federal agency/bureau or Tribal Government</b>	

In my opinion, the property ___ meets ___ does not meet the National Register criteria.	
_____ <b>Signature of commenting official:</b>	_____ <b>Date</b>
_____ <b>Title:</b>	
_____ <b>State or Federal agency/bureau or Tribal Government</b>	

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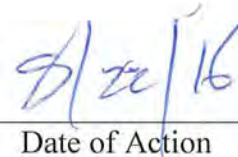
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**4. National Park Service Certification**

I hereby certify that this property is:

- entered in the National Register
- determined eligible for the National Register
- determined not eligible for the National Register
- removed from the National Register
- other (explain:)

  
Signature of the Keeper

  
Date of Action

**5. Classification**

**Ownership of Property**

(Check as many boxes as apply.)

- Private:
- Public – Local
- Public – State
- Public – Federal

**Category of Property**

(Check only **one** box.)

- Building(s)
- District
- Site
- Structure
- Object

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**Number of Resources within Property**

(Do not include previously listed resources in the count)

Contributing	Noncontributing	
<u>2</u>	<u>          </u>	buildings
<u>          </u>	<u>          </u>	sites
<u>1</u>	<u>          </u>	structures
<u>          </u>	<u>          </u>	objects
<u>          </u>	<u>          </u>	buildings
<u>3</u>	<u>          </u>	Total

Number of contributing resources previously listed in the National Register 0

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**6. Function or Use**

**Historic Functions**

(Enter categories from instructions.)

DOMESTIC/single dwelling  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Current Functions**

(Enter categories from instructions.)

DOMESTIC/single dwelling  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



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## 7. Description

### Architectural Classification

MODERN MOVEMENT/hyperbolic paraboloid

### Materials:

Principal exterior materials of the property: Foundation: concrete; Walls: burnt adobe and cast concrete, glass; Roof: concrete and synthetics

## Narrative Description

### Summary Paragraph

The Harrenstein House is located in the Santa Catalina Estates subdivision northeast of the intersection of First Avenue and Orange Grove Road in the Catalina Foothills north of the Tucson city limits in unincorporated Pima County, Arizona. The single-family residential house, guest house/garage and pool were built in 1962-63 and are an example of a highly expressive residential single-family Modern building. The primary character-defining feature of the Harrenstein House is the thin-shell, concrete, intersecting hyperbolic paraboloid form that creates the structural system and roof. Floor to ceiling glass window walls and burnt adobe enclose the six spaces created by the undulating geometry of the concrete. In addition to the main house, the property includes a guest house and garage set into the sloping topography of the site, and a swimming pool that is the focal point of the back yard. There have been almost no modifications to the property since construction. The building retains a high level of integrity.



Fig. 1. Harrenstein House, Tucson Citizen Home Section, photo by Bill Sears, 1966



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## Narrative Description

### Location and Setting

The Harrenstein House is located on the alluvial fan of Santa Catalina Foothills in unincorporated Pima County, north of Tucson, Arizona, at 6450 North Calle De Estevan. The City of Tucson is situated in the southeast portion of the state in the Sonoran Desert uplands. The house is located in the suburban 1960 subdivision of Santa Catalina Estates. The subdivision is characterized by large desert lots, native vegetation, and post-1960 construction. The Harrenstein House, guest house/garage, and pool is a single-family residence built in 1962-63. The circular plan house is set back in the middle of the lot: east of North Calle De Estevan and north of Orange Grove Road. The lot features native Sonoran Desert vegetation and nonnative plants immediately surrounding the house. A driveway runs from the northwest corner of the lot south around the house to the south facing entrance and down an incline to a parking area in front of the south elevation of the guest house/garage. Almost no modifications have been made to the property or building since construction was completed in 1963.



*Fig. 2. Harrenstein House, north elevation, photo by Bill Sears, 1966.*

### Exterior

The primary character-defining feature of the Harrenstein House is the highly sculptural series of three thin-shell concrete intersecting hyperbolic paraboloids which create the physical form of the house and define the interior spatial arrangement. The sculpted rolling idiosyncratic roof form divides the house into six distinct “petals” outspread from a central spoke. The poured-in-place-concrete circular roof is supported by six burnt adobe interior and exterior walls over a hexagonal floor plan.

A large aluminum frame sliding entry door recessed in one of the hyperbolic walls is a focal point of the front elevation. Aluminum frame windows and window walls infill the space

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between the floor and the roof allowing light to penetrate into the house but are set deep into the shell creating significant shade from the desert sun. The center of the house is a sunken circular living room that can be seen through the window walls. The bedrooms, dining room, kitchen and entryway are arranged in a circular pattern radiating from the edges of the living room and have a strong relationship with the exterior. The roof was assembled in six pie-shaped sections. A series of curved burnt adobe patio walls form the exterior courtyards and spaces distinct from the native landscape beyond. These patios correspond to the wedges of the house.



*Fig. 3. Harrenstein House, southeast elevation, "backyard" with pool in foreground. Photo by Bill Sears, 1966.*

The Harrenstein House, a rare example of thin-shell concrete intersecting hyperbolic paraboloids in single family residential style, retains sufficient integrity to convey its significance. The exterior details, fixtures and finishes are distinctively associated with the Modern Movement in architecture; the detailing captures and showcases a distinctive style. The combination of material, concrete, distinctive engineering, and site utilization highlight architectural and engineering skills.



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The Harrenstein House retains the extraordinary thin-shell concrete intersecting hyperbolic paraboloid design with window walls that frame the outdoor landscape and expansive views of the mountains. All of the original Harrenstein design features, elevations and visual approach to the house remain intact.

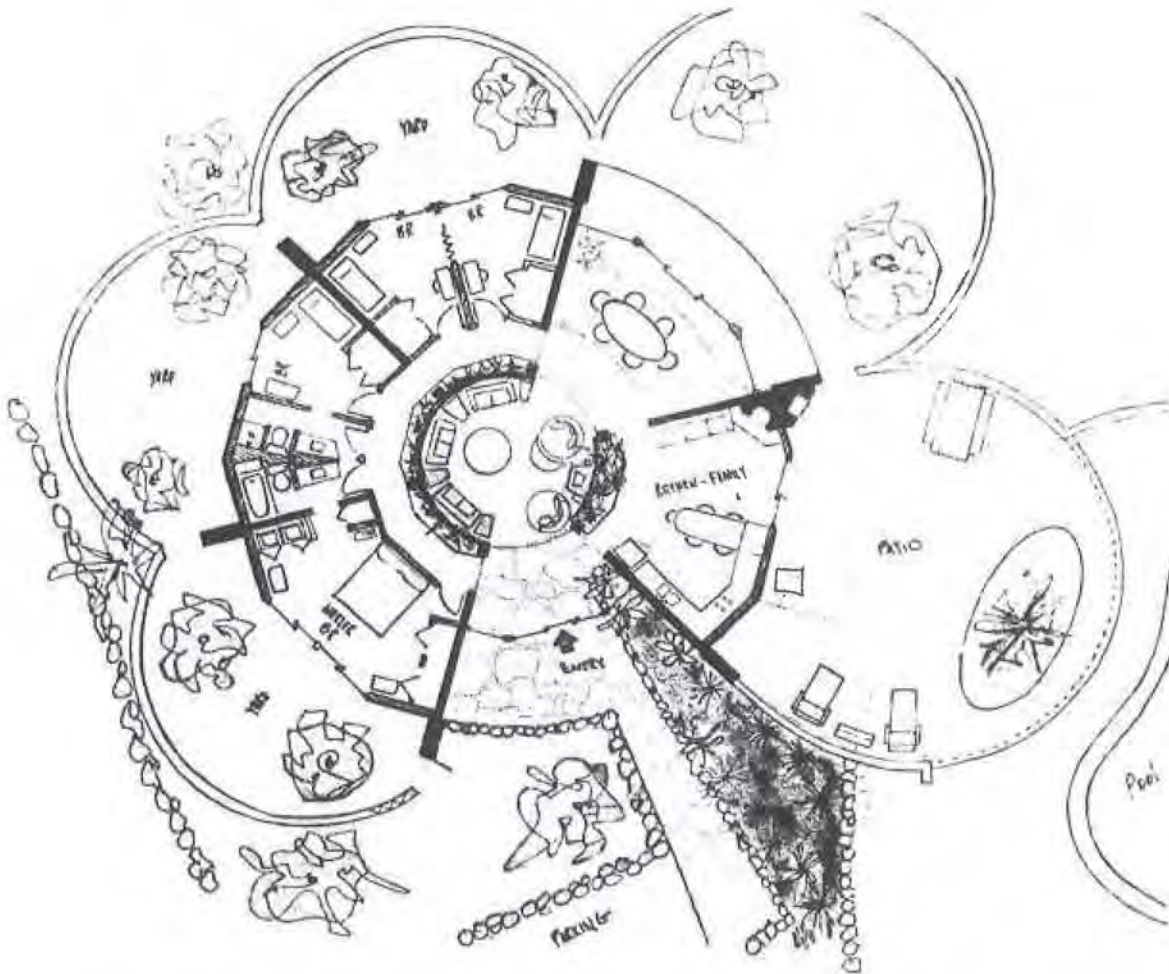


Fig. 4. Harrenstein House Floor Plan, 1963. (drawing by Howard Harrenstein) Published Tucson Daily Citizen Homes 1966.

The Harrenstein House design elements are key aspects of the Modern Movement in Tucson, including the cast-in-place concrete roof form, burnt adobe, sculptural building form, and unique interior space created by the structural roof system.



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*Fig. 5. Harrenstein House, kitchen burnt adobe fireplace. Photo by Bill Sears, 1966.*



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The radial shaped plan of the house is 45 ft. in diameter; 8 ft. tall in the at the center point. The interior highpoint (at the inside of a wall) of each hyperboloid is 11 ft. 2 in, the exterior highpoint is 160 inches (13 ft. 4 in).

### Interior

The residence retains sufficient integrity to convey its significance. The footprint and envelope of the house is unchanged. The details, fixtures and finishes are associated with Modern Movement; the detailing captures and showcases a distinctive style and retains a unique “sense of place.” The geometric, one story plan creates intimate and expressive interior spaces while promoting a vision of “tomorrow.” The details in combination with the design and the response to views create an outstanding and unique example of expressive Modern design.

The geometric zonal configuration creates a series of wedge shaped rooms with a total of 1,986 sq. ft. of interior space (Pima County Assessor). The public living spaces: entryway, kitchen and dining room, are open and on the eastern side of the disk. Each are connected to exterior patios and outdoor space. The bedrooms are clustered in the western wedges off a crescent hallway that is created by a 3/4 tall Philippine mahogany paneled wall. The central space is a sunken circular living room. The dining room has polished terrazzo floor, the entranceway sandstone, and the bedrooms and living room carpeted.



*Fig. 6. Harrenstein House, South Elevation Entrance, photo by Bill Sears 1966.*

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The entryway is located on the south elevation with a glass sliding door, and built-in interior and exterior planters. A rubber tree planted in 1963 remains. Entering the house, the kitchen service room is to the right with a built-in burnt adobe fireplace; glass doors lead to the backyard, swimming pool and guest house/garage beyond. To the north of the kitchen is the dining room.

The details of the interior showcase employ a limited material palette, masterfully used to capture an elegant modernist sensibility, while at the same time functional spaces are cleverly fit into the constraints of the structural form. The carefully-framed views of surrounding desert celebrate the natural environment and create a juxtaposition between the ultra-modern interior and the Sonoran Desert.

### **Guest House & Carport**

The guest house is embedded into the sloping grade of the site, reducing the visual intrusion of on the views of the main house. The rectangular building faces south and its roof serves as a sundeck. The guest house is 624 sq. ft. The guest house is constructed of exposed burnt adobe block and wood structural beams. The front facade of the building faces southeast with window walls and a glass sliding door. The window walls have been covered with painted siding.

### **Pool**

The biomorphic or “kidney” shaped pool is the focal point of the terraced backyard and was constructed concurrently with the house. The western edge of the pool is included in Fig. 4 of the Harrenstein House Floor Plan from 1963. The sloping interior of the concrete pool has a coping along the edge of concrete tiles and the walls of the pool are a light blue.

The pool is similar to a long oval with an indentation on one side. A counterpoint to the crisp lines of a rectilinear type pool, the biomorphic-shape presents a more organic approach that is consistent with the distinctive design of the house.

### **Alternations**

The only alterations to the property are the modification of the exterior site wall with the addition of a concrete breeze block cap and the removal of the interior asbestos ceiling in the early 2010s and exposure of the cast concrete.

### **Integrity**

The Harrenstein House retains sufficient integrity of both site and residence to convey significance. The minimal alterations have not diminished the integrity. The property conveys its original stylistic expression. The property retains its original use of materials and workmanship. The property retains its original design details, including: the thin-shell concrete roof, fireplaces, original bathrooms, casework and the exterior elevations. The massing of the house is retained and is unchanged from period of significance. The limited alterations have almost no impact on the original design. The house retains its original spatial qualities.



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**Geographic Information**

The Harrenstein House reflects the land planning ideals set forth during post-World War II Tucson and Pima County. The house is located in an area featuring large lot sizes, and native landscaping, and vegetation. The original lot is intact.

**Boundaries**

The boundaries are consistent with the original 1960 subdivision lot. The original viewshed, both of and from the property is preserved.

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## 8. Statement of Significance

### Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A. Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B. Property is associated with the lives of persons significant in our past.
- C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D. Property has yielded, or is likely to yield, information important in prehistory or history.

### Criteria Considerations

(Mark "x" in all the boxes that apply.)

- A. Owned by a religious institution or used for religious purposes
- B. Removed from its original location
- C. A birthplace or grave
- D. A cemetery
- E. A reconstructed building, object, or structure
- F. A commemorative property
- G. Less than 50 years old or achieving significance within the past 50 years

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**Areas of Significance**

(Enter categories from instructions.)

Architecture

Engineering

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Period of Significance**

1963

\_\_\_\_\_  
\_\_\_\_\_

**Significant Dates**

1963

\_\_\_\_\_  
\_\_\_\_\_

**Significant Person**

(Complete only if Criterion B is marked above.)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Cultural Affiliation**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Architect/Builder**

Dr. Howard Paul Harrenstein

\_\_\_\_\_  
\_\_\_\_\_



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### Statement of Significance Summary Paragraph

The Harrenstein House, built in 1962-63, is eligible for listing on the National Register of Historic Places under Criterion C, at the local level of significance, as a unique design of a thin-shell concrete single-family residential building utilizing hyperboloid construction in Tucson, Arizona. The experimental construction of the house utilized three intersecting hyperbolic surfaces to create a highly distinctive form. During and after construction, it was recognized locally for its innovative design. The *Tucson Daily Citizen Homes*, a weekly newspaper magazine, featured the house on its cover on Saturday June 11, 1966. Mary Brown the *Citizen Homes* Editor wrote the feature detailing the development and design of the distinctive property. Because of the site location, in a densely vegetated desert lot, the house was obscured from view and the unique architectural expression forgotten until it was featured as part of Tucson Modernism Week in 2016. Although there are other examples of hyperbolic paraboloid structures in Tucson this is the most expensive known residential design. The house is an outstanding example of the Expressionist subtype of Architecture of the Modern Movement in Tucson.



Fig. 7. Harrenstien House west elevation, photo by Howard Harrenstien 1963. THPF digital collection.

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**Narrative Statement of Significance** (Provide at least **one** paragraph for each area of significance.)

In 1962-63, University of Arizona Civil engineering professor Dr. Howard Paul Harrenstein constructed an experimental home for his family in the foothills of the Santa Catalina Mountains. Harrenstein blended his expertise in structural design and background in civil defense to create a highly distinctive thin-cast concrete residence. The home, located in Santa Catalina Estates, (Fig. 10) was inspired by “Los Manantiales” (1958) designed by Mexico City architect, Felix Candela. (Fig. 8)



*Fig. 8. “Los Manantiales” (1958) designed by architect Felix Candela, Mexico City, photo by Howard Harrenstien. THPF digital collection.*

The Harrenstein House was composed of three intersecting hyperbolic paraboloids and is a masterful combination of artistry and structural engineering. Harrenstein was an authority on shell construction, he earned bachelor’s degrees in both architecture and architectural engineering from Kansas State University and received a master’s degree in structural engineering and doctorate degree in engineering mechanics from Iowa State University. He published numerous papers on thin-shell concrete construction including his 1960 “Hyperbolic



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Paraboloidal Umbrella Shells under Vertical Loads” in the *Journal of the American Concrete Institute* and 1961 “Configuration of Shell Structures for Optimum Stress” in the *Proceedings of the Symposium on Shell Research*, Delft, Aug. 20–Sept. 2, 1961” printed by Amsterdam North-Holland Publishing Company.



Fig. 9. Concept Model (Harrenstein House) 1961, THPF Digital Collection.

Howard Harrenstein worked with his father, Jacob Harrenstein, a general contractor, to build the house. Harrenstein created a model which provides a reference for the design development of the project. (Fig. 9) From the model, the design was refined from eight to six sections, and the central courtyard eliminated. In 2016, Harrenstein was interviewed by the *Arizona Daily Star*. He noted that the forms for each section were erected and the concrete poured mostly with buckets before moving on to the next section. “Each section was one-sixth of the total circle [...] So we would put it in place and then we’d do the concrete. Then we’d move it 60 degrees and we’d do it again. We worked around the circle and the next thing we knew, the circle was complete.”

Harrenstein’s professional engineering work was focused on civic defense during the Cold War with the Soviet Union. Tucson was a locus of the Titan Missile Defense System with 18 active



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missile silos sited around the city, making the area a known nuclear target. The Titan II launch complex 571-7 south of Tucson was listed as a National Historic Landmark in 1994.

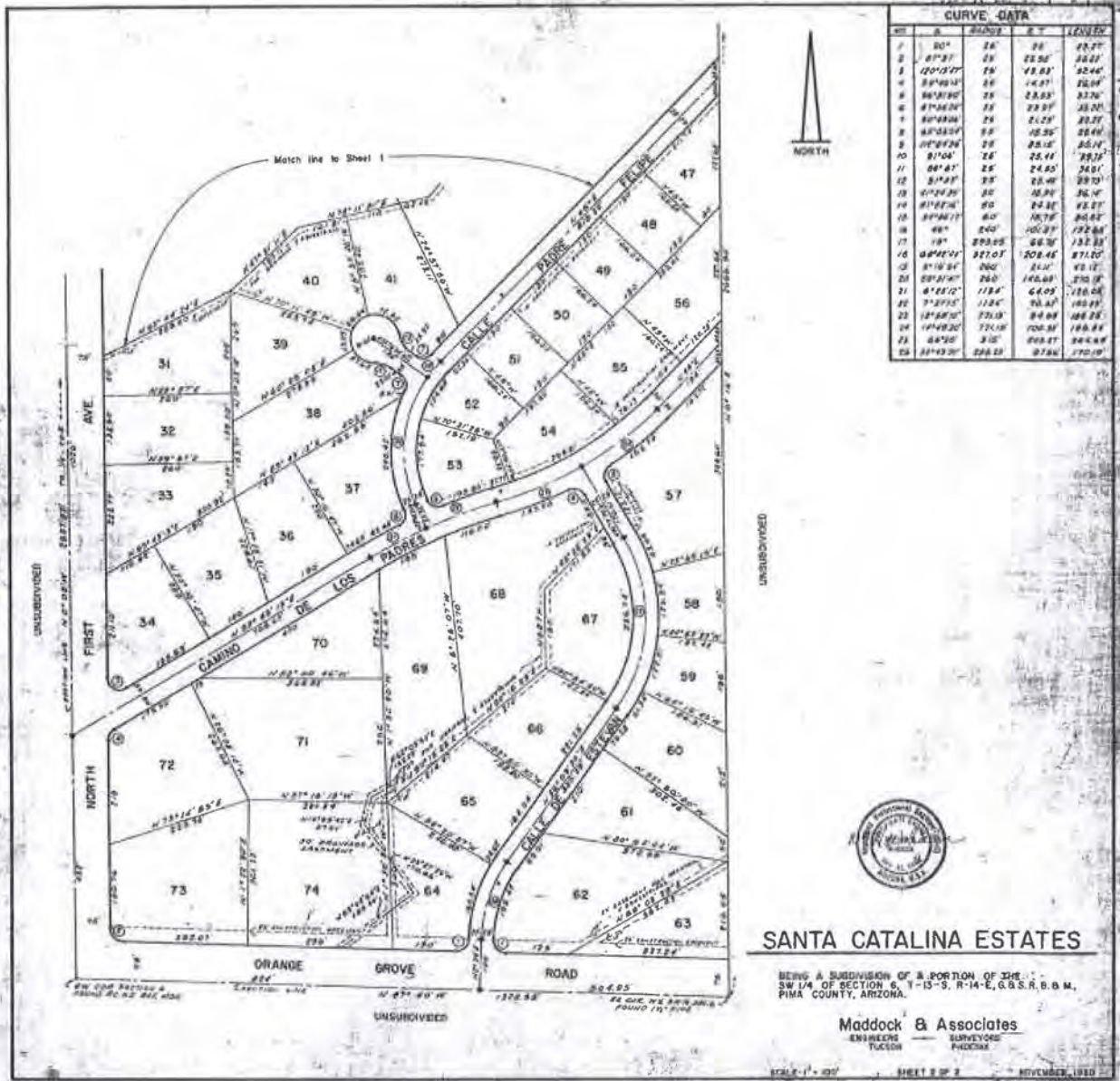


Fig. 10. Santa Catalina Estates, subdivision plat map, 1960.

Harrenstein, an expert and consultant in bomb shelter design, embedded his expertise in civil-defense into the architecture of the house. Not only was the house conceived to survive an atomic attack, Harrenstein nested a bomb shelter underneath the center of the home. The house is

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not only an outstanding example of expressive modern architecture but a physical articulation of the Atomic Age.

The futuristic design of the house reflects the cultural milieu of the era. Noted projects across the country from this period that embody this “space age” flavor include the 1961 Los Angeles International Airport Theme Building designed by architects Pereira & Luckman, Paul Williams and Welton Becket. It is worth noting that Hanna-Barbera’s *Jetsons* aired in September of 1962 which glorified this futuristic conception of living.

In 1966, three years after the completion of the house, Harrenstein accepted a position at the University of Hawaii, sold the property, and permanently left Tucson.



*Fig. 11. Harrenstien House under construction, photo by Howard Harrenstien 1962-63. THPF digital collection.*

### **Architecture of the Modern Movement in Tucson 1945 - 1975**

Sarah Allaback’s 2003 *Essays on Modern Architecture* produced for the National Park Service provides a context for evaluating the architectural significance of this property. Allaback introductory essay is excerpted:



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American architects began to experiment with styles beyond the traditional neoclassical in the early nineteenth century. Styles were chosen for their historical associations and the buildings were considered architecturally pure versions of the past. By the end of the century, architects felt free to combine styles in an “eclectic” manner, without such concern for stylistic origins. New technologies and building materials encouraged this emerging experimentation. If this was all modern, however, it was certainly not “modernism.” When European modernism arrived in the United States in the 1920s no one could mistake it for anything that went before. Historians quickly labeled this early phase of modern architecture the International Style. It was short-lived. The white, geometric forms were too bleak for Americans, especially since they came without the social meaning of their European counterparts.

The International Style was imported to the United States, but its early development was not without American influence. As European architects began experimenting in wild new forms of architecture, materials and forms, they studied the designs of Frank Lloyd Wright, whose work had been published in portfolios by 1910. Nothing Wright designed remotely resembled the sleek European buildings, but none could deny that his work was both modern and impossible to ignore. [...] different forms of modern architecture with very different sensibilities were able to develop side by side in America. Frank Lloyd Wright and his Prairie School influenced all American architects, even immigrants like Richard Neutra and Walter Gropius.

By the 1950s, modern architecture had been popularized to the point where it lost its shocking newness. The developers of Levittowns and other postwar subdivisions introduced popular versions of “the modern home.” While middle-class Americans enjoyed the luxury of picture windows, carports and split-levels, the architectural profession moved beyond what most people would consider domestic space. Philip Johnson’s famous Glass House was the architectural equivalent of the artist framing a blank canvas. Once everything had been removed but glass, leaving the essence of a building, there was no place left to go. Postmodernism developed in the late 1950s and early 1960s as a rejection of the blankness of modernism. It was all about adding layers of meaning, however artificial. Although refreshing at the time, this self-conscious style could not sustain itself. Architects of the twenty-first century are designing modern architecture that is colored by its own modernistic past. And, according to architectural histories, that past has already stood the test of time. [...] roughly from the late 1920s to the early 1960s. Whether or not we appreciate these buildings, they represent a key moment in our history, a time when all historical reference was thrown aside in favor of something new and unexplored. From our perspective, the explosion of modern architecture is dulled by familiarity. But in the 1920s a line was crossed that we can barely comprehend. Buildings went from being cultural books--their stories revealed in symbols and inscriptions rich in historical meaning--to being mute wonders of technology suggesting infinite possibility. The architectural historian and critic John Jacobus, Jr., reminds us that “nearly every present day architect, whatever his station or

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real sentiment, at least professes allegiance to the outward materialistic manifestations of the creative revolution that took place with the International Style.” Modern buildings exemplify the search for the limits of building and design, the exploration of new interpretations of what is comfortable, and the effort to maximize human potential through building.

In the Pre-World War II era, Tucson and Southern Arizona’s built environment was defined by a host of revival architectural styles that promoted the region’s romantic southwestern roots. In the late nineteenth and early twenty centuries, architect Henry Trost moved to Tucson from Chicago having worked in the office of Louis Sullivan. His architectural expression blended the Chicago school with regionalism, and shaped the growing cities of Arizona including Tucson, Bisbee, and Douglas, before moving to El Paso Texas. His architecture was early manifestation of American modernism pioneered by Sullivan. Not until the interwar years would Tucson-based architects Richard Morse and Arthur T. Brown began experimenting with European ideas of Modern architecture. Morse’s Forest Lodge (1935), designed for Margaret Howard, Countess of Suffolk and Berkshire, was directly inspired by his time in Europe looking at Modern architectural design pioneered by the Bauhaus.

Like many cities after World War II, Tucson grew rapidly. In 1940, the population was 35,000; by 1960 it had reached 212,000. This population boom translated to significant housing development and the outward expansion from the urban core. A new cohort of young architects and architectural designers began to shape the city.

Numerous subtypes of architectural expression emerged within Tucson’s Modern Movement. The subject of this nomination falls into the category of Expressionism. Adrain Sheppard, Fellow of the Royal Architectural Institute of Canada, in the paper “The Return of Expressionism and the Architecture of Luigi Moretti” provides a broad national context of the American emergence of architectural Expressionism:

The European Expressionist movement of the 1920’s and 1930’s had little or no impact on North American thinking before World War II. In the mid-fifties however, well after the demise of the movement in Europe, some architects in America began to question current architectural trends at home. These doubters of Modernism found their inspiration in various models of nonconventional architecture, including the Pueblo style, the more unusual work of Wright, the Amsterdam School housing, and the architecture of Rudolf Steiner in Germany. Much like their European counterparts, American Expressionist architects took a radical position with respect to their work. They shared an anti-academic and anti-historical attitude towards design and believed that architectural unity could be best served by formal continuity rather than by the application of compositional or geometric rules. They adopted a language of sweeping curves, jagged surfaces, uneven or distorted structural systems, sculptural effects, asymmetry, and dynamic forms. Although the number of Neo-Expressionist architects in America was relatively small, their work was a confirmation that the movement constituted a potent force on the continent.

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The most extravagant of the American architects was Bruce Goff who taught and practiced mainly in Oklahoma and its neighbouring states. Goff was both fearless and formally exploratory, and was labelled by Peter Cook as the primary exponent of Experimental Architecture in the United States. Goff's lifelong plea was for a highly creative form of architecture, and he produced a totally original vocabulary. For Goff, every building had to be a prototype and a unique experience. He spoke often of a 'continuous present' and of notions of composition that had no beginning and no end. Goff had no specific architectural style. He switched easily from free-form, to the use of bric-a-brac, to highly geometric configurations, to pseudo-Wrightian modes. His architecture was one of wilderness romanticism and objets trouvés, of had hoc solutions, and of the use of discarded industrial materials. He believed that architecture was an impure art because it had to solve a multitude of problems. Not only did he accept the notion of compromise, but he embraced it. Like Venturi, he was totally opposed to an exclusive, idealized architecture.

No building of Goff's epitomizes his approach to architecture more eloquently than the Eugene Bavinger House (1950), near Norman, Oklahoma. The house is a complex, indefinable composition of circles, masts, and spiral walls. The roof as well as secondary volumes is supported by an idiosyncratic cable structure attached to a central mast. The outer walls of the Bavinger House are made of rubble masonry and other materials. In other houses, Goff used coal, rope, paper, and material retrieved from rubbish heaps. He became a hero of the architectural counter-culture of the 1950's and 1960's. His place in the culture of America is similar to that of Lucien Kroll in Belgium. The latter also maintained that Modernism is essentially a totalitarian barbarism that is exclusive, but taught to be inclusive. Goff designed the Green House (1960), also in Norman, and similar in nature to the Bavinger House. The house is a collage of eccentric shapes, unusual materials, and rich textures. Critics see his houses as a true expression of Mid-western regionalism.

[It is worth noting that in 1974 Bruce Goff's Tucson project Barby, Celestine, House, number 2 was constructed at 711 N. Camino de Fosforo, Tucson, Arizona. The house retains its integrity and significance as an important example within Goff's design portfolio.]

A parallel can be drawn between the radicalism of Goff and Venturi. Both architects were "bored" by the blandness of Modernism, both took a populist stand, and both sought to create an architecture of richness, joy, and ambiguity. They wanted to enrich the language of Modernism and invent a new way of approaching architecture, yet despite their common concerns, the two architects are profoundly different. Venturi's view of design is highly cerebral and based on the interpretation of precedent and history, while Goff is all gut, feeling, and subjectivity.

Frank Lloyd Wright was by far America's most versatile architect. Although he cannot be considered an Expressionist in the true sense of the term, some of his post-war buildings clearly embody the values and formal ideas associated with Neo-Expressionism. The



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Guggenheim Museum in New York is, par excellence, a Neo-Expressionist icon. In the 1940's, Wright produced some highly unconventional houses which were radical departures from his earlier Prairie domestic architecture. Neil Levine speaks of the figurative nature of Wright's Prairie houses which can be read and understood much like the figurative paintings of Cezanne and Bruce Goff borrowed this phrase from Gertrude Stein, a writer he greatly admired. Both he and Stein liked the concept that things had no beginning and no end, that one could add, subtract, or alter anything. Picasso. In the Herbert Jacobs House (1944) in Middleton, Wisconsin, known as the Solar Hemicycle, the domestic figuration is gone and the forms bear little resemblance to the conventional elements that make up Wright's Prairie houses. In the Jacobs House, form is not dictated by precedent and local design traditions, but by the sensibilities of the architect, the nature of the land, and the premise of the program

The Italian-born Paolo Soleri, more than any other American architect deserves the label of NeoExpressionism. Soleri produced an enigmatic body of work which belongs to the world of sculpture rather than that of architecture. His buildings, while interesting and provocative, are places and spaces one can inhabit but in which one cannot live. Their beauty is derived from their poetic logic and their philosophical underpinnings. Soleri is not as concerned with the here and now as with the development of a Utopian world of reveries, shapes and sustainable ecology. From 1956, when he settled in Scottsdale, Arizona, Soleri devoted his life to creating an environment of on-going experimentation in desert ecology and urban planning. His work is strongly influenced by the Jesuit Paleontologist movement and by the writings of Pierre Teilhard de Chardin. His most famous project, Arcosanti, [North of Phoenix, Arizona] begun in 1970 is a dream-like 'city on the mesa' and more a poetic manifesto than a work of architecture. Similarly, Soleri's design studio in Scottsdale (1961) is an outlandish building which looks like an assembly of skeletal elements, strange shapes, tilted knobby columns, ribbed vaults, and a myriad of odd architectonic elements. The studio has a Gaudi-like appearance (Fig. 27) which is no coincidence but the result of similar interests in using structure as a primal design instrument.

[Tucson is home to Paolo Soleri's 1986 University of Arizona Cancer Center Chapel. The building has been repurposed as offices, but the chapel remains intact and retains its integrity and significance.]

During the 1960's, Eero Saarinen was one of America's principal masters of the NeoExpressionism movement. It is ironic that he was also one of America's most successful establishment architects. He was able to produce a body of significant Expressionist works for corporate and institutional clients who usually seek the route of safe, conservative architecture. Saarinen was one of the few architects who convinced his clients that daring, unconventional buildings made corporate sense. He began his career as a committed follower of Mies van de Rohe and produced a series of highly disciplined buildings, most notably the General Motors Technical Centre in Warren, Michigan (1948-56), which he designed with his father, Eliel. The Centre was as pure and rational

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as any Mies building, no less an essay in rationalism and visual order than Mies' campus for the Illinois Institute of Technology.

Soon after the completion of the General Motors Centre, Saarinen changed his vision dramatically. His first and most significant Neo-Expressionist building was the TWA Terminal (1959-1962) at Kennedy Airport (formerly Idlewild). In this project, he attempted to express the idea of flight. Allan Tremko described the Terminal as "an abstraction of spatial liberty, expressed in continuous movement beneath the soaring roof". Saarinen believed that modern architecture lacked drama. He wanted to create memorable buildings with daring structural techniques. His goal was "to express the drama and the specialness and excitement of travel" Arcosanti was begun in 1970, and by 2005 only 3% of the entire project was completed. It is a view shared by the great cathedral builders of the past who took well over a century to complete a project. His solution was to create a vast 315-foot-long concrete shell made of four intersecting barrel vaults supported by four enormous Y-shaped columns. It was a totally new solution for an airport terminal building. The terminal was an optimistic statement and a prototype for a new monumentality, setting a conceptual precedent: the transformation of the classical notion of monumentality. Only Hans Scharoun's Philharmonie in Berlin and Jorn Utzon's Opera House in Sidney have attained the same level of free-form monumentality and Expressionism.

Concurrently, Saarinen designed two other significant Neo-Expressionist buildings, the Ingalls Hockey Rink at Yale University (1956-1958) and Dulles International Airport (1958-1962) in Chantilly, Virginia (near Washington, DC). Both buildings used a suspended flying roof system to span the great space below. In the Yale Ice Hockey Stadium, Saarinen suspended a steel-cable roof on both sides of a central concrete arch spanning the entire building longitudinally. From a formal point of view, the building is a dynamic interplay of convex and concave forms, of sloped and straight walls, of high and low spaces. Together with the TWA Terminal, it is the building which best conveys Saarinen's interest in architectural dynamism. Dulles International Airport has a simple rectangular plan, but the form of the building is complex. The terminal is a compact building and an exercise in architectural and technical formalism. The structural concept is manifest and consists of colonnades of tilted and tapered columns on the two long facades of the terminal from which is suspended a steel-cable roof. The roof is high in the front, lower in the rear, and its lowest point, as in all catenaries structures, is in the middle of the span. The colonnades, together with the curved shape of the roof, emphasise the dynamic qualities of the building.

In Tucson, during the late 1950s and early 1960s, a number of local architects including Nicholas Sakeller, Arthur Brown, William Wilde, and Charles Cox began experimenting in the Expressionist idiom, responding and tailoring designs to the environmental conditions of Arizona's Sonoran Desert. These architectural and engineering compositions employed new technologies and mathematical principles. Hyperbolic paraboloid structures and thin-shell concrete systems emerged as design methods to push the boundaries of traditional construction.



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### Architecture & Engineering Significance

The development of thin-shell concrete as a building material was detailed in the June 2002 essay by Bradshaw, Richard et. al. titled "Brief History of Thin Shells" from the paper "Special Structures: Past, Present, and Future" published in the Journal of Structural Engineering from the American Society of Civil Engineers. The essay examined the history, form and utilization of thin shell construction and hyperbolic paraboloids. This paper provides an excellent context of the development of this modern construction idiom:

Architectural thin shells discussed in this work are a modern development. The domes and cylindrical shaped structures of antiquity and the Middle Ages were thick and could only resist compressive loads. The first modern architectural shell is generally credited to that built by the Zeiss optical company in Austria in the 1920s. In the United States, shells were extensively studied by the aircraft industry in the 1930s. In 1933, Donnell, an aeronautical engineer, formulated the general equations for cylindrical shells, including both bending and membrane actions.

While Eduardo Torroja of Spain is credited for the systematic engineering study of *architectural* shells in the 1930s, it was the work of Felix Candela in Mexico that ignited the sudden surge of popularity of shells in the 1950s. His shells were spectacular both for appearance and for bold engineering. At a time when a 75-mm 3 in. thick shell was considered daring, Candela built a hyperbolic paraboloid shell with less than 16 mm 5/8 in thickness for the Cosmic Ray Pavilion at Ciudad University in Mexico City to show examples of how Candela skillfully created different shells from the same hyperbolic paraboloid geometry.

It was an article in *Progressive Architecture* 1955 on the shells of Candela that launched the modern shell era by attracting the attention of architects. [Examples] of the remarkable early shells [are] the air terminal in St. Louis, MIT auditorium in Boston, TWA terminal in New York, Sports Palace in Italy, and Exhibition Hall in Paris. The latter, designed by Esquillan, is one of the engineering marvels of the 20th century, whose statistics define its uniqueness. [...] Remarkably, this was all in 1957, before the use of computers.

The history of civil engineering has repeatedly shown that new types of structures have been built before their behavior was fully understood. This is as true of modern shells as it was of the cathedrals of the Middle Ages; that rational explanation for their success was found only after the persistence of their existence forced their recognition. The early practitioners had to rely on intuition and courage rather than on written knowledge. It can be certain that a great deal of anxiety took place before Candela built his 16 mm 5/8 in. thick Cosmic Ray Pavilion. One could only imagine the fortitude it took to remove the forms from under the 218 m 715 ft. span of Esquillan's Exhibition Hall.

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The structures of the skilled practitioners of the art, such as Candela, Esquillan, Torroja, and Nervi are distinguished by their elegance in minimizing the thickness, eliminating the ribs, and avoiding the hinges at the abutments. It suffices to note that the span-to-thickness ratio of a well-designed shell is considerably larger than that of an eggshell. Ribs are used to carry the shear forces from the shell to the abutments and to prevent buckling of the edges. However, it is possible to eliminate many ribs by making the shell itself act as the rib. This requires skilled analysis, which tests the knowledge and nerve of the designer. Hinges between the shell and the abutments reduce the capacity of the structure and serve only to simplify the design.

### Shells and Geometry

There is no type of structure that has so intimate a relationship with space geometry as a shell. There are two important yet simple geometrical observations in shells: all constructed shells are only fragments of a more complete geometrical shape; and all geometric surfaces would either continue to infinity or intersect with themselves.

[...]

Shells can be singly curved e.g., cylinders and cones or doubly curved e.g., sphere or hyperbolic paraboloid. Paraboloid is a shell of revolution made by revolving a parabola about its axis. A hyperbola produces a hyperboloid of two sheets when rotated about its axis of symmetry, and a hyperboloid of one sheet when rotated about the common axis between its two parts. The latter is often used for cooling towers, because it can be formed of straight lines. Another doubly curved shape formed of straight lines is the conoid, for which a straight line travels along another straight line at one end and a curve at the other end. Shells of translation are generated by translating one curve along another. A circle-translated tangent to a straight line generates a cylinder, and if translated along another circle produces a torus.

[...]

All shells have either positive bowl-shape or negative saddle-shape curvature. The behavior of these two types of shells is very different. Positive curvature shells are subject to buckling, as the entire shell is subject to compression forces. In contrast, material failure is more common in negative curvature shells with brittle materials such as concrete.

Hyperbolic paraboloids HP are doubly curved surfaces with negative curvature. An HP can be generated by lifting one corner of a square shape. [...] Lines parallel to the x- and y-axes remain straight lines. This is very important because the surfaces can be formed with straight forms, which are much more economical than curved forms. An HP can also be generated by translating a convex parabola along a concave one shows an HP in its more usual orientation and a structure built from it. If the convex parabola had been

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translated along another convex parabola instead of the concave parabola, it would have produced an elliptic parabola with a positive curvature. [...] [A] simple change in the geometric parameters can result in a very different shape with greatly different structural behavior.

In Arizona the development and utilization of thin-shell construction was experimented within an array of new construction materials and structural techniques pioneered after WWII. In Tucson, the first popular mention of hyperbolic paraboloid construction in newsprint appeared in the *Arizona Daily Star* on December 23, 1956 in a national column titled "Residence Given Unusual 'Twist'" The article discussed the Donald Dean houses in Kansas and highlighted the use of a hyperbolic paraboloid roof. (That property is now listed in the National Register of Historic places). (Wylie, Hugh J., *Arizona Daily Star*, Residence Given Unusual 'Twist', December 23, 1956)

In 1957, John Wise, structural engineer with the Portland Cement Association based in Los Angeles, California, spoke at a meeting of the Tucson Chapter of the National Society of Professional Engineers discussing the "Design of Thin-Shelled Concrete and Hyperbolic Paraboloids. (*Arizona Daily Star*, Wise to Address Engineer Society, April 11, 1957). In December of that same year Walter Kunzy, a structural engineer from the Chicago office of the Portland Cement Association lectured at the University of Arizona on "Thin Shell Concrete". (*Arizona Daily Star*, Cement Engineer to Speak at the UA, December 5, 1957).

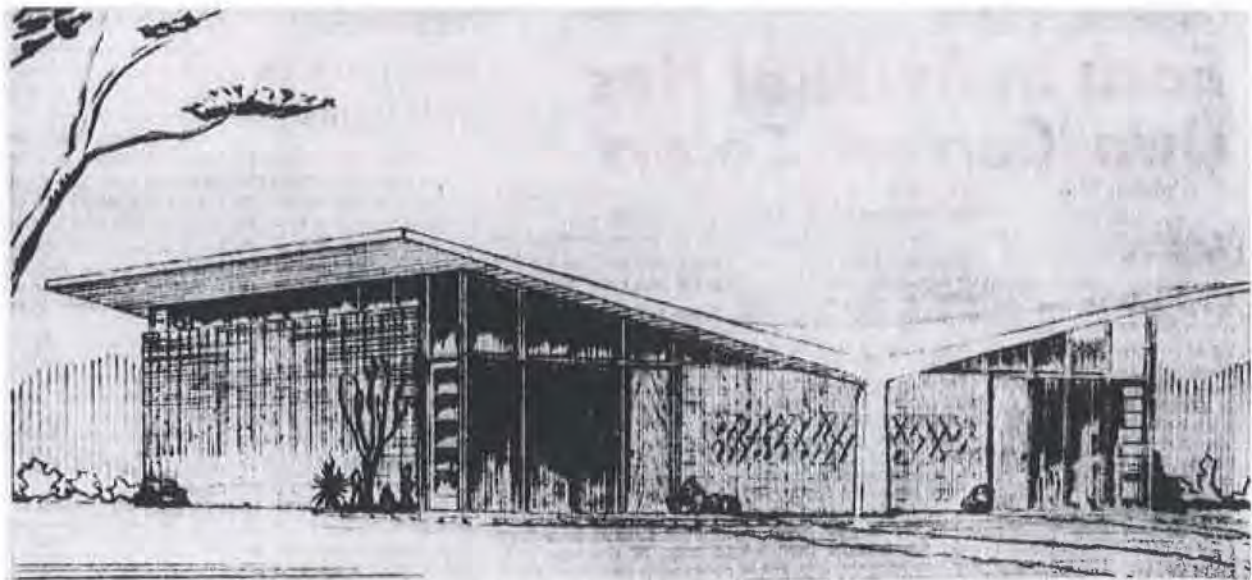


Fig. 12. Sentinel Land and Development Corp. Model House, Architect J.H. Beck drawing, 1958.



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Within six months the first Arizona building to use a hyperbolic paraboloid concrete structure began construction in Tucson. Richard R. Hughes president of Sentinel Land and Development Corp. built a demonstration duplex with plans to build 100 more. Although the plan to develop a hundred homes was never realized, the extant model was constructed at 4616-18 East Fairmount Avenue with a 40 x 50-foot thin shell concrete roof supported by two columns, creating a 2,000 square-foot livable space. (Fig. 12) The project was designed by architect John H. Beck and AE Consultants Inc, architect and engineers. T.W. Kramer civil engineer and W.M. Waggoner mechanical engineer worked on the project and W.L. Johnson Construction Co, was the contractor. (*Arizona Daily Star*, Hyperbolic Paraboloid Structure Being Built, May 18, 1958.)

In June 1958 the Harlow Nursery hired Tucson architect William Wilde designed an addition. The building utilized thin-shell concrete technology in the construction of a barrel design roof. The building at 5620 East Pima was developed in consultation with Johannessen Girand and Taylor consulting and construction completed by Jaco Construction Company. The *Tucson Daily Citizen* noted it was the “first thin-shell concrete structure to be poured in Tucson.” (*Tucson Daily Citizen*, Another Tucson First, June 21, 1958.)



Fig. 13. Harlow Nurusy, Thin Shell concrete barrel roof design, Architect William Wilde, 1958. Photo *Tucson Daily Citizen*, 1958.

The same year, Architect Charles Cox was commissioned to design a new sanctuary for the Catalina American Baptist Church (1900 N Country Club Rd, Tucson, AZ 85716) using a large hyperbolic paraboloid design. (Fig. 14) (*Tucson Daily Citizen*, Church Style the First of its Kind, June 7, 1958.) The sanctuary was constructed between 1960-61 and listed on the National Register of Historic Places in 2011. During 1958, architect Nicholas Sakellar & Associates designed a concrete ceiling utilizing a hyperbolic paraboloid, built by Johnson Construction



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Company for the Saddle & Sirloin Steakhouse at 2130 North Miracle Mile Strip for owner James Sfarnas. The building, part of the Miracle Mile Historic District (listed 2017), is designated as a non-contributor because of modifications that obscure the design, however the hyperbolic paraboloid form can be seen from north elevation. (*Tucson Daily Citizen*, Teagarden to Open at Saddle, July 27, 1962)



Fig. 14, *Catalina Baptist Church, Construction Photograph 1960-61, Catalina Baptist Church Collection.*

In 1959, architect John Beck again utilized the hyperbolic paraboloid form, for the new Dodge automobile sales agency Bill Breck Dodge, Inc. located at the southeast corner of East Speedway Boulevard and Bentley Avenue (demolished). The *Arizona Daily Star* at the time noted the main structure “will employ the modernistic hyperbolic paraboloid roof style, will house a 15,000 square foot showroom and administration office.” (*Arizona Daily Star*, “Bill Breck to Open New Dodge Agency in City”, August 18, 1959.) The same year, a 2-million-dollar medical office building at 601 North Wilmot Road was designed by architectural Emerson Scholer of the firm of Scholer and Fuller on the northwest corner of 5th Street and Wilmot Road. The building, believed at the time to be the largest structure in the southwest employing this structural principle, utilized a massive system of hyperbolic paraboloids. (demolished) (*Tucson Daily Citizen*, “Medical Building Planned,” Feb 9, 1960.) (*Tucson Daily Citizen*, “\$1 Million Medical Building Planned Beneath Gigantic Concrete Umbrella,” October 22, 1959.) In Phoenix that year, the geometric structural system was used as a roof form at the Lou Register warehouse at 4701 West Colter. (*Arizona Republic*, “Umbrella Roof,” November 8, 1959.)



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New technologies continued with experiments by local Tucson architects, and in February 1960, architect Arthur T. Brown used plastic and aluminum to construct a house replete with a hyperbolic paraboloid roof. (Riddick, John, *Tucson Daily Citizen*, "Plastic Home in Tucson May be First of Its Kind," Feb 25, 1960.) In October of 1960 The American Concrete Institute held a conference in Tucson hosting 300 attendees from across the American west, Canada and Mexico. Dr. Gene Nordby, head of the University of Arizona Civil Engineering department, served as the general chairman of the conference. The conference presented papers on defense, and breakthroughs in technology and design. The attendees looked at advances in engineering. The *Tucson Daily Citizen* reported: "For example they have found that they could make extremely thin sections and by forming them into special geometrical shapes like hyperbolic paraboloids and domes... One of the beauties of the thin shell construction is that it has a high factor of survey." (Reddick Josh, *Advances, Tucson Daily Citizen*, "Uses of Concrete Pondered by 300 Experts," Oct 31, 1960.)

In 1961 *Sunset* magazine constructed a demonstration garden at the Arizona Sonoran Desert Museum. (Fig. 15) The garden included a wall made of native rock and utilized a hyperbolic paraboloid concrete shell to form a dramatic division of the garden area. Landscape architect Guy Greene designed the project. (Ernenwein, Leslie, *Tucson Daily Citizen*, "Garden at Desert Museum to be Completed in 62'," March 1, 1961.)



Fig. 15. *Sunset Magazine Demonstration Garden, Desert Museum, Landscape Architect Guy Greene, Photo by Bill Sears, 1962.*

In 1961, Reid and Hazard, Tucson-based architects, designed the Flowing Wells Elementary School with a "rolling barrel-style roof". The drawings were developed in partnership with the architectural firm of Shaver & Co. of Salina, Kansas. The school was a series of four classroom



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buildings built in a semi-circle around multi-purpose buildings. The roofs were created with a 12-shell barrel design of thin-shell concrete. (*Tucson Daily Citizen*, "Flowing Wells Board Ok's Design of Elementary School," January 27, 1961.)

Regionally, the La Concha Motel Lobby (1961) in Las Vegas (Fig. 16) was designed by Paul Williams. The form and shape, derivative of Felix Candela's "Los Manantiales" (1958) in Mexico City, is geometrically related to the Howard Harrenstein House design. It is in this window of time and within this design context that Harrenstein conceives and builds his home. His design is the most aggressive use of thin-shell concrete and hyperbolic paraboloid construction in residential architecture in Tucson.



Fig. 16, La Concha Motel in Las Vegas (Paul Williams, 1961). photo 2011.

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From this period, the other notable regional example utilizing the hyperbolic paraboloid and thin-shell construction was major redevelopment of Nogales, Sonora. In 1962, both the U.S. and Mexico invested millions in a new border stations. The American Port was conceived and designed by the Tucson architectural firm of Scholer & Fuller as a geometric International-style building. The Border Crossing and Aduana in Nogales, Sonora was designed by Mexico City architect Mario Pani as part of a complete re-envisioning of the Sonoran border town. Pani's style was organic and exuberant. The port was conceived as two cascading cast concrete arches. The entry was only one aspect of a new building complex which included buildings with cast concrete barrel vaults, expressive forms more sculptural than architectural, a large hyperbolic parabola, (Fig. 17) and a railway station designed by Raul Mendez featuring a series of angular hyper projections and idiosyncratic sail shapes that point over the railroad tracks punctuating the sky.



*Fig. 17. Nogales Border redevelopment 1962, Architect Mario Pani. Photo by THPF.*

In Arizona, the hyperbolic paraboloid reached an apex with the construction of the Memorial Coliseum at the Arizona State Fairgrounds. (Fig. 18) Designed by Phoenix architects Lescher & Mahoney with participation from the Tucson firm of Place & Place, the monumental structure marked the end of the general use of this structural system in construction in Arizona as tastes began to shift.



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Fig. 18, Memorial Coliseum at the Arizona State Fairgrounds, Photo courtesy of: CMag.

### **Dr. Howard Paul Harrenstein**

Howard Paul Harrenstein was born in Kansas City, Missouri in 1931. Harrenstein received a bachelor of science in architectural engineering and a bachelor of architecture degree from Kansas State University, and Masters of Science degree in civil engineering and Ph.D. in theoretical and applied mechanics from Iowa State University. His thesis titled "Configuration of Shell Structures for Optimum Stresses" was published in 1959.

In 1959 he served as an assistant professor of civil engineering at Iowa State University. His was the primary author on numerous papers including "Structural Behavior of a Plate Resembling a Constant Thickness Bridge Abutment Wingwall" (1959) published by Iowa State College of Agriculture and Mechanic Arts and "Stress Distribution in Hyperbolic Paraboloidal Shells Under Concentrated Loads" (1961) published by Iowa State University of Science and Technology. (*Arizona Daily Star*, "Regents Okay 132 Faculty, Staff Appointments," June 25, 1960)

In June of 1960 Harrenstein was appointed Associate Professor of Civil Engineering at the University of Arizona and relocated his young family to Tucson. Harrenstein was a regular presenter at professional conferences including the American Society for Engineering Education and Arizona Section of Civil Engineers. With three academic colleagues, Harrenstein received a national award from the American Institute of Architecture, and the U.S. Office of Civil Defense in 1962 for a bomb shelter design. (*Arizona Republic*, "Four UofA Professors Share Prize," Nov, 28, 1962.)

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Fig. 19. Dr. Howard P. Harrenstein, 197.5

In February 1962, the Tucson Mayor and Council appointed Harrenstein to the first Civil Defense Commission. (*Tucson Daily Citizen*, "Mayor, Council Appoint Civil Defense Council," Feb 19, 1962.) Harrenstein worked with the University of Arizona and the newly formed Tucson-Pima County Civil Defense Agency to present workshops to "acquaint architects, engineer, builders, contractors and others with methods of identifying, improving, constructing or improving community and family bomb shelters." (*Arizona Daily Star*, "Bomb Protection Workshop Slated at UA Nov. 20," November, 13, 1962.) In early 1963 Harrenstein led a fifteen-week course in "nuclear fallout." (*Tucson Daily Citizen*, "Fallout Course Under Way," February 9, 1963.)

Harrenstein was a charter member of the Structural Engineer Association of Southern Arizona formed in May of 1963 (*Arizona Daily Star*, "Engineers' New Group to Meet," May 9, 1963.) In February of 1964 Harrenstein was appointment as director of the Tucson-Pima County Civil Defence Agency. (*Arizona Daily Star*, "Harrenstein Considered for CD Post," January 29, 1964).



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With 18 Titan II missile silos headquartered in the Sonoran Desert, Tucson was a known nuclear target, and in his role, Harrenstein developed a theoretical total shelter system for the city.

In 1966 Harrenstein accepted a position at the University of Hawaii and left Tucson with his family. In April of that year he was formally appointed Associate Dean of College of Engineering & Director of the Engineering Research Center at the University of Hawaii. In 1972 Harrenstein joined the University of Miami in Florida as the dean of the School of Engineering and Environmental Design and professor of civil engineering.

Harrenstein served as the chairman of the architectural engineering division of the American Society for Engineering Education and for six years was the chairman of the ASEE- Associated Collegiate School of Architecture- Office of Civil Defense Advisory Committee to Civil Defense.

In 1975 Harrenstein became the director of the Solar Energy Research Center at Florida Technological University. Harrenstein continued to practice engineering and by 1983 had opened the consulting firm of Howard P. Harrenstein and Associates in Miami, Florida

The Harrenstein house is the only example of Harrenstein's architectural and engineering design in Arizona.

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Tucson Daily Citizen, Flowing Wells Board Ok's Design of Elementary School, January 27, 1961.

Tucson Daily Citizen, Fallout Course Under Way, Feb 9, 1963.

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**Previous documentation on file (NPS):**

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # \_\_\_\_\_
- recorded by Historic American Engineering Record # \_\_\_\_\_
- recorded by Historic American Landscape Survey # \_\_\_\_\_

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**Primary location of additional data:**

State Historic Preservation Office

Other State agency

Federal agency

Local government

University

Other

Name of repository: \_\_\_\_\_

**Historic Resources Survey Number (if assigned):** \_\_\_\_\_

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**10. Geographical Data**

**Acreage of Property** 0.97 acre

**Latitude/Longitude Coordinates (decimal degrees)**

Datum if other than WGS84: \_\_\_\_\_

(enter coordinates to 6 decimal places)

1. Latitude: 32.324070

Longitude: -110.957145

**Verbal Boundary Description** (Describe the boundaries of the property.)

Major cross streets are Orange Grove and Oracle Roads with the property to the north of Orange Grove and west of Oracle Road. The legal description for 6450 N Calle de Estevan in Pima County GIS is:

SANTA CATALINA ESTATES LOT 60

The boundary is the lot shown on the site map (Fig. 20).

**Boundary Justification** (Explain why the boundaries were selected.)

The boundary is the property parcel historically associated with the Harrenstein House since its construction in 1963.



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Figure 20. Boundary map of Harrenstein House. Pima Maps GIS, 2018.

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### 11. Form Prepared By

name/title: Demion Clinco  
organization: Tucson Historic Preservation Foundation  
street & number: P.O. Box 40008  
city or town: Tucson state: AZ zip code: 85717  
e-mail: info@preservationtucson.org  
telephone: (520) 247-8969  
date: May 20, 2019

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### Additional Documentation

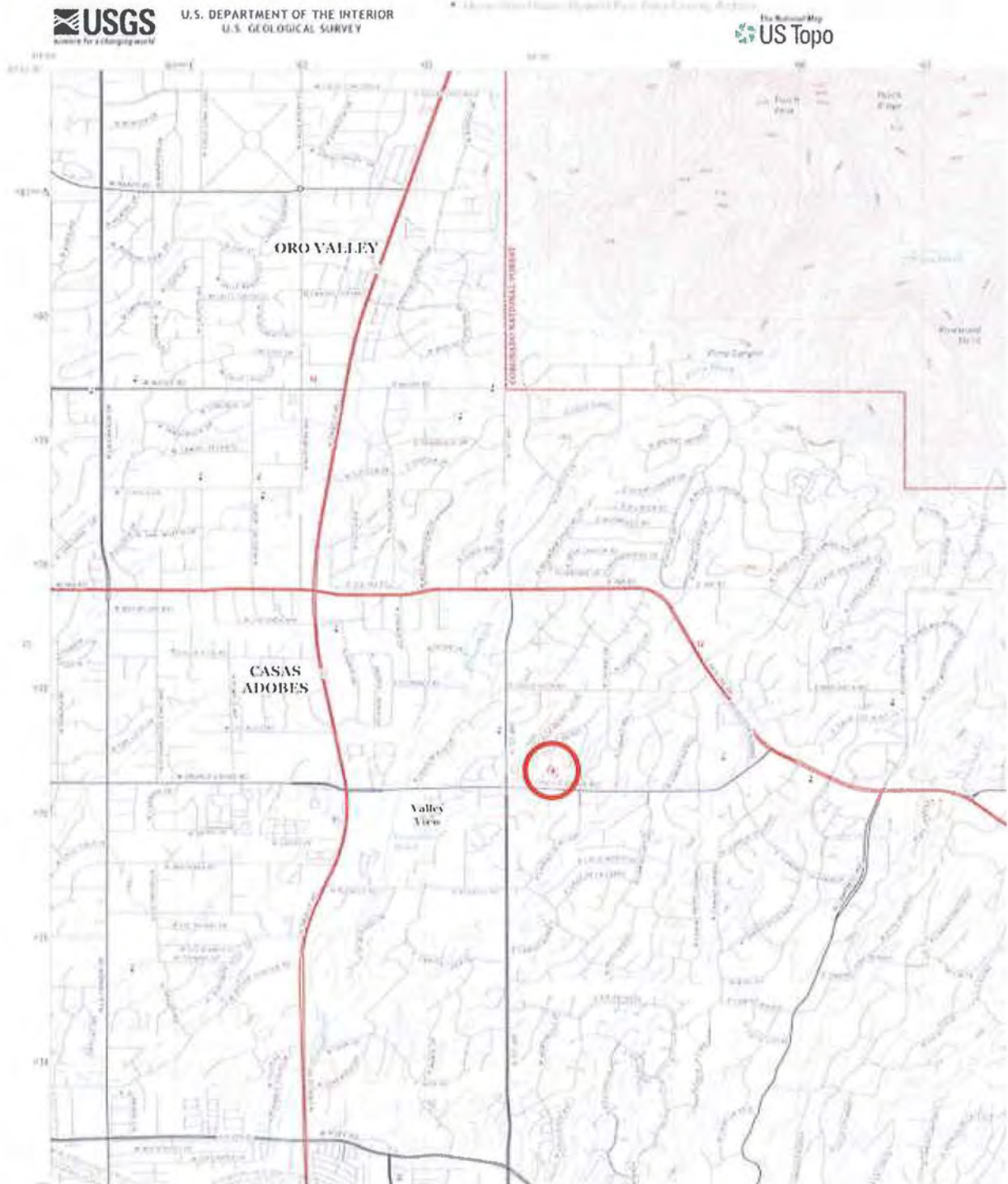
Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15-minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.)



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**Harrenstein, Dr. Paul Howard, House (circled)**

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### Photographs

#### Photo Key: Exterior Photos



#### Photo Log

Name of Property: Harrenstein House

City or Vicinity: Tucson

County: Pima

State: AZ

Photographer: Jude Ignacio and Garadene Vargas

Date Photographed: 2016



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Description of Photograph(s) and number, include description of view indicating direction of camera:

1 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0001

Looking northeast, south front elevation, main entrance

2 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0002

Looking north, south front elevation

3 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0003

Looking northwest, south front elevation thin-shell detail

4 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0004

Looking north west, south and east elevation, front elevation and kitchen elevation detail

5 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0005

Looking east, west facade, site wall and landscape

6 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0006

Looking northeast, interior dining room and window wall

7 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0007

Looking southwest, interior living room and entryway

8 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0008

Looking southwest, dining room interior view

9 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0009

Looking west from kitchen, Philippine mahogany cabinet casework detail

10 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0010

Looking southeast, interior, kitchen fireplace

11 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0011

Interior, bathroom detail

12 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0012

Interior, bedroom detail

13 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0013

Looking northeast, exterior, pool

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14 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0014

Looking northwest, exterior guest house

15 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0015

Looking northeast, exterior guest house

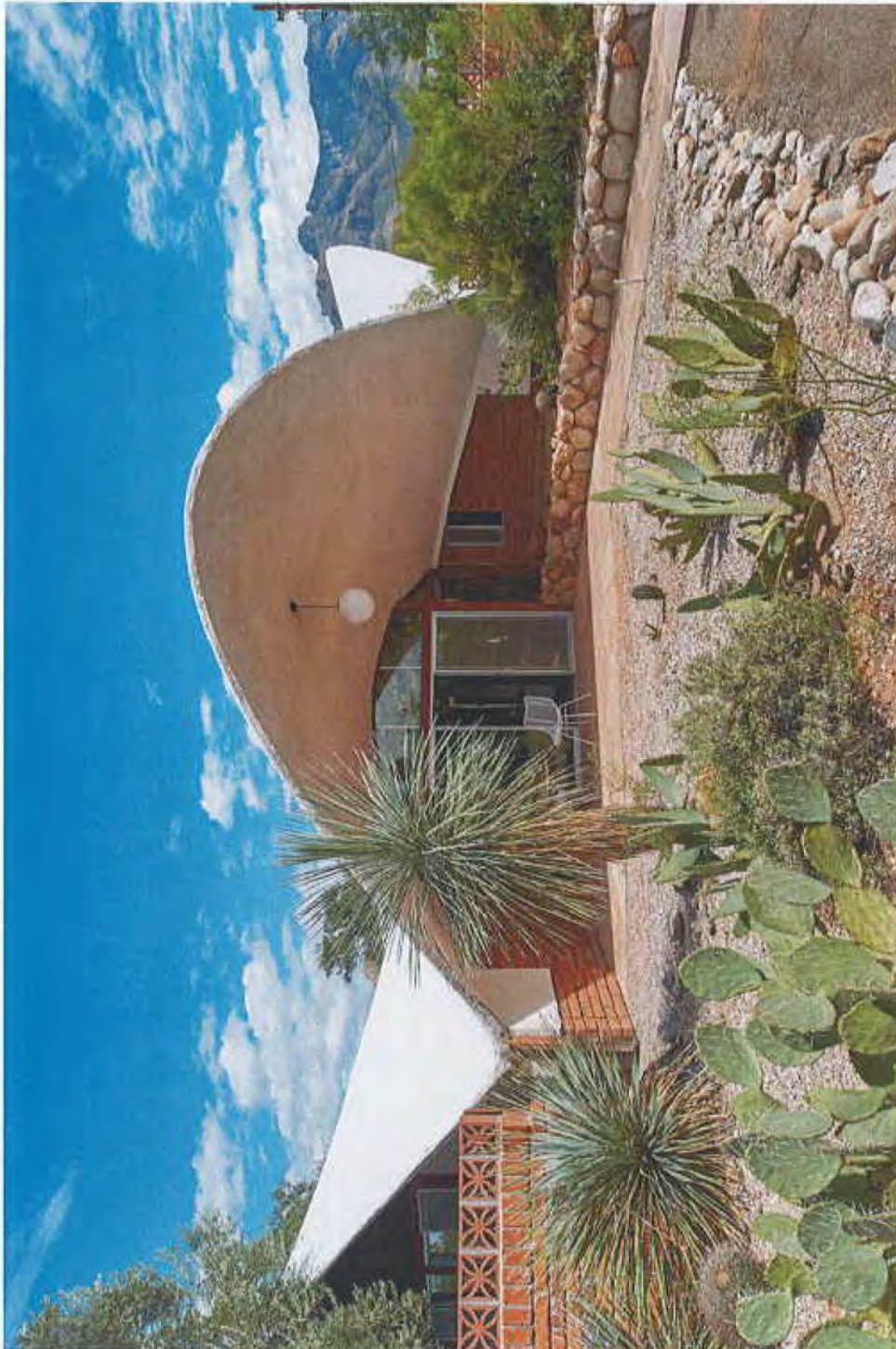
**Paperwork Reduction Act Statement:** This information is being collected for applications to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C. 460 et seq.).

**Estimated Burden Statement:** Public reporting burden for this form is estimated to average 100 hours per response including time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding this burden estimate or any aspect of this form to the Office of Planning and Performance Management, U.S. Dept. of the Interior, 1849 C. Street, NW, Washington, DC.



Harrenstein House  
Name of Property

Pima, AZ  
County and State

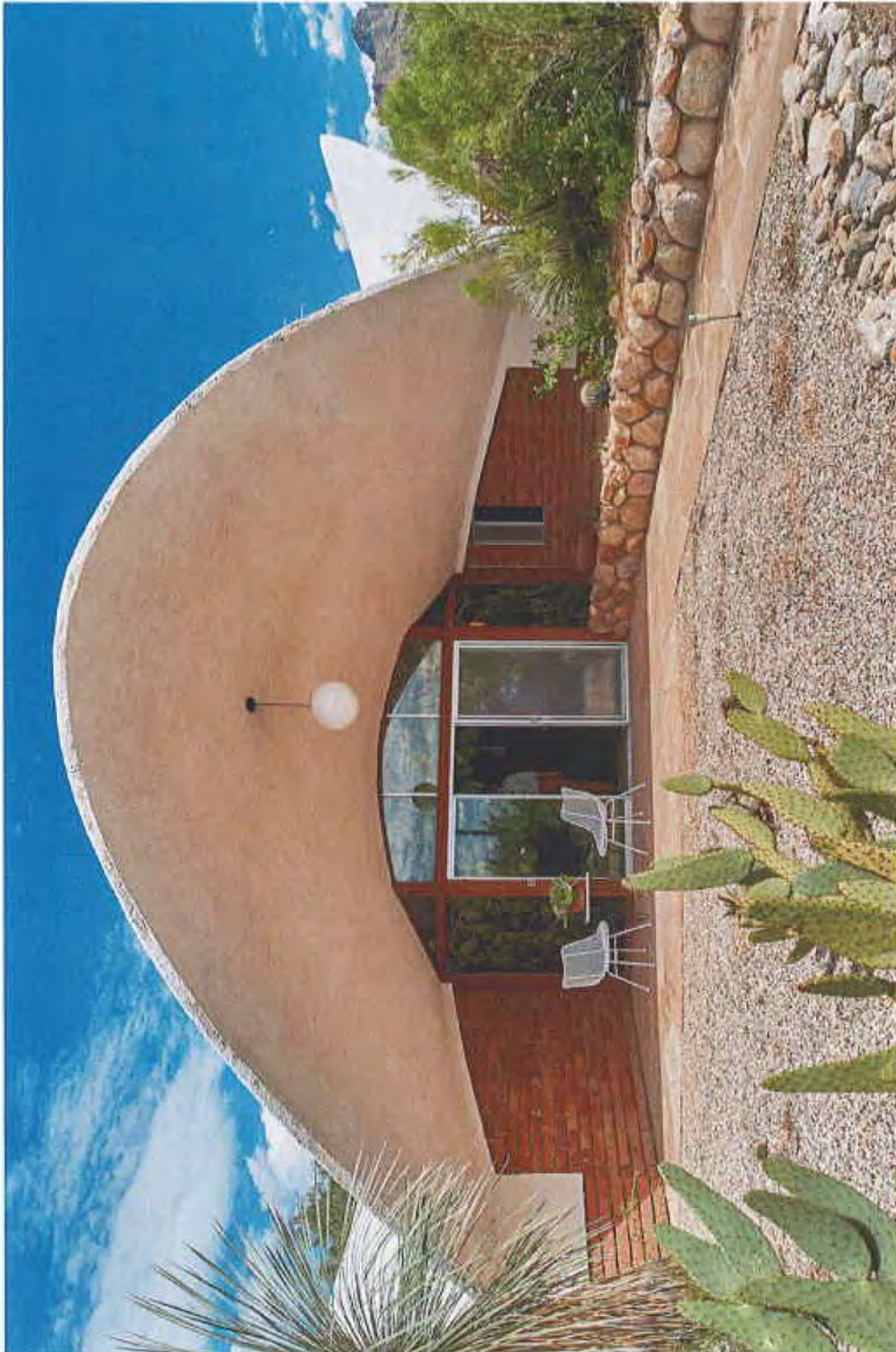


1 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0001  
Looking northeast, south front elevation, main entrance



Harrenstein House  
Name of Property

Pima, AZ  
County and State



2 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0002  
Looking north, south front elevation



Harrenstein House  
Name of Property

Pima, AZ  
County and State



3 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0003  
Looking northwest, south front elevation thin-shell detail

Harrenstein House  
Name of Property

Pima, AZ  
County and State



4 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0004  
Looking north west, south and east elevation, front elevation and kitchen elevation detail



Harrenstein House  
Name of Property

Pima, AZ  
County and State

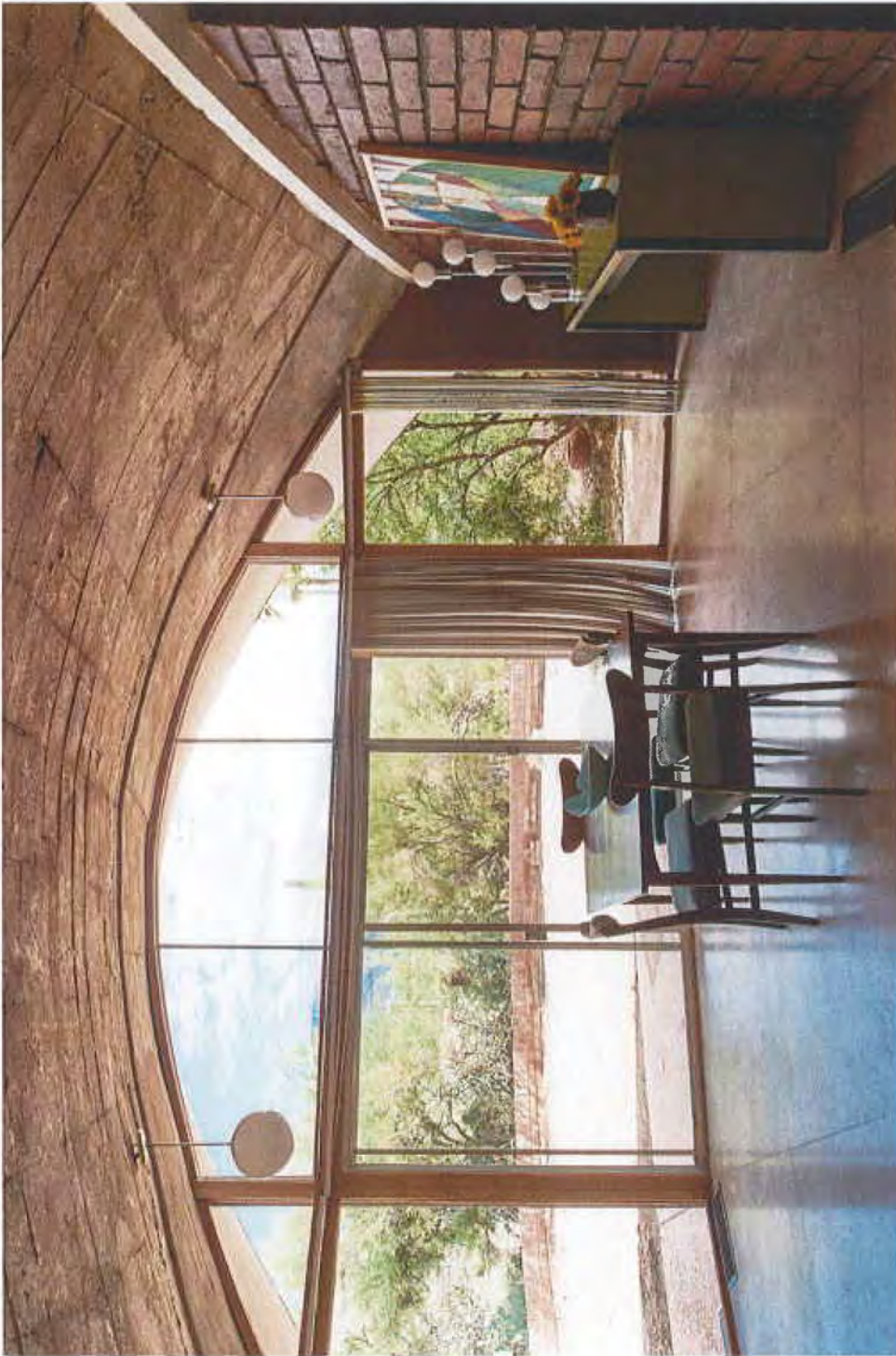


5 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0005  
Looking east, west facade, site wall and landscape



Harrenstein House  
Name of Property

Pima, AZ  
County and State



6 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0006  
Looking northeast, interior dining room and window wall



Harrenstein House  
Name of Property

Pima, AZ  
County and State



7 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0007  
Looking southwest, interior living room and entryway

Harrenstein House  
Name of Property

Pima, AZ  
County and State



8 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0008  
Looking southwest, dining room interior view



Harrenstein House  
Name of Property

Pima, AZ  
County and State



9 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0009  
Looking west from kitchen, philippine mahogany cabinet casework detail

Harrenstein House  
Name of Property

Pima, AZ  
County and State



10 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0010  
Looking southeast, interior, kitchen fireplace



Harrenstein House  
Name of Property

Pima, AZ  
County and State



11 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0011  
Interior, bathroom detail

Harrenstein House  
Name of Property

Pima, AZ  
County and State

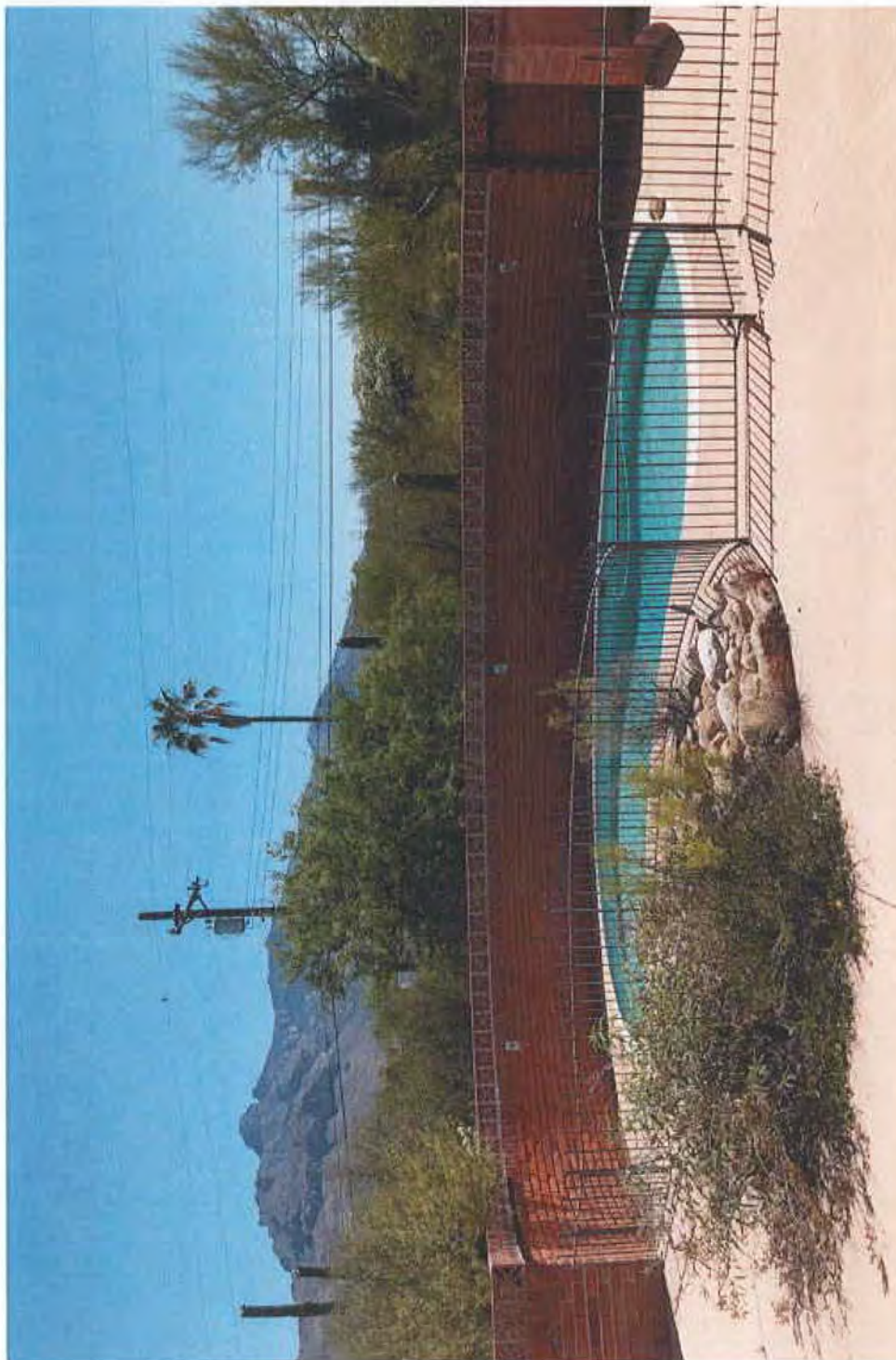


12 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0012  
Interior, bedroom detail



Harrenstein House  
Name of Property

Pima, AZ  
County and State



13 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0013  
Looking northeast, exterior, pool

Harrenstein House  
Name of Property

Pima, AZ  
County and State



14 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0014  
Looking northwest, exterior guest house



Harrenstein House  
Name of Property

Pima, AZ  
County and State



15 of 15. AZ\_PimaCounty\_HarrensteinHouse\_0015  
Looking northeast, exterior guest house









































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UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES  
EVALUATION/RETURN SHEET

Requested Action:

Property Name:

Multiple Name:

State & County:

Date Received: 7/8/2019      Date of Pending List: 7/30/2019      Date of 16th Day: 8/14/2019      Date of 45th Day: 8/22/2019      Date of Weekly List:

Reference number:

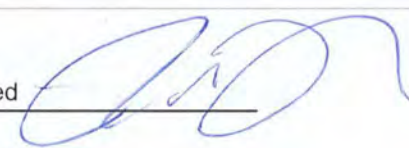
Nominator:

Reason For Review:

Accept       Return       Reject      8/22/2019 Date

Abstract/Summary Comments:

Recommendation/ Criteria

Reviewer Roger Reed  Discipline Historian

Telephone (202)354-2278 Date 8/22/16

DOCUMENTATION:    see attached comments : No    see attached SLR : No

If a nomination is returned to the nomination authority, the nomination is no longer under consideration by the National Park Service.



**ARIZONA STATE HISTORIC PRESERVATION OFFICE (SHPO)  
NATIONAL REGISTER NOMINATION  
TRANSMITTAL FORM  
\*\*FEDERAL EXPRESS\*\***



**DATE: July 2, 2019**

**TO:**

**Joy Beasley  
National Register of Historic Places  
1849 C Street NW, Mail Stop 7228  
Washington, D.C. 20240**

**FROM:**

**William Collins  
National Register Coordinator  
State Historic Preservation Office  
1100 West Washington Street  
Phoenix AZ 85007**

**National Register Submissions:**

**Harrenstein, Dr. Howard Paul, House  
Tucson vic., Pima County**

**Southern Pacific Railroad Depot (Removal)  
Yuma, Yuma County**

**Should you have any questions or concerns, please contact me at  
wcollins@azstateparks.gov or 602.542.7159.**