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01 Pierre Koenig's drawing of the south façade of Case Study House # 21

Pierre Koenig: Case Study House # 21
Born San Francisco, California, October 17, 1925 (family later moved to Los Angeles when a young boy)

Attended University of Utah, School of Engineering through U.S. Army training program, 1943

Flash ranging observer U.S. Army, 1943-46 (awarded three battle stars)

Attended Pasadena City College, 1946-48

Attended University of Southern California (USC), 1948-52

Designed and built first exposed steel and glass house, Glendale, California, (while student) 1950

Started own architectural practice prior to graduating architecture school at USC, 1950
Precedent Analysis  arc 572

UT Solar Decathlon 2009
Pierre Koenig
Case Study House #21 | Bailey House  |
Hollywood | 1958 - 1959

Worked for Raphael Soriano, 1950
Awarded Bachelor of Architecture from USC, 1952
Worked for A. Quincy Jones, 1956
Elected member AIA Southern California chapter, 1958
Completes Case Study House # 21, 1959
Completes Case Study House # 22, 1960
Joins Faculty USC College of Architecture, 1961
Elected to College of Fellows of the AIA, 1971
Awarded AIA 200 / 2000 Award, 1983
Awarded AIA Gold Medal + Star of Design for Lifetime Achievement in Architecture, 1999
Succumbs to effects of leukemia at home in Los Angeles, April 4, 2004

01 Koenig surveying the site during construction of the Case Study House #21
02 An older Koenig before his death from leukemia in April 2004
This sparse perspective drawing (by Koenig) of Soriano’s 1950 case study house is indicative of Koenig’s style. Koenig worked in Soriano’s office as an intern during the summer of 1950 while the elder architect had four different steel frame residential projects in varying stages of the design process. Because of their shared interest in steel construction, Koenig later described the working relationship as “mutually beneficial…I had something to offer him and he to me.”

Koenig worked closely with steel company representatives to budget the construction of his first personal residence while still a student at the University of Southern California College of Architecture. The mobile exhibition pavilion pictured above was designed for Bethlehem Steel in 1962 and traveled the country for two years before winning a design award for best exhibition design in Portland, Oregon in 1964.
Precedent Analysis

UT Solar Decathlon 2009
Pierre Koenig
Case Study House #21 | Bailey House | Hollywood | 1958 - 1959

ARCHITECT | PLACE+PROGRAM | SPACE+ORDER | CONSTRUCTION
+EXPRESSION
biography  | regional context | urban context | primary structural system
influence  | building typology | building diagrams | secondary structural system
bibliography | environmental context | interior conditions | mechanical systems
materials


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01 Koenig at work in the study area of the house he designed and built for himself in Glendale, California, 1950.
The Case Study Program was created in 1946 by Arts and Architecture Magazine editor John Entenza to help bring modernism into the mainstream. Architects had been afforded few opportunities for work during consecutive decades of economic depression and world war in the 1930’s and 40’s. The ensuing optimism of the 1950’s coupled with the influx of American soldiers returning from foreign theaters fueled a burgeoning need for housing, especially on the West Coast. This housing boom, along with the technological innovations of the war era, provided great opportunity for structural, material, and spatial experimentation in the sphere of residential design. The CSH Program sought to unite select architects with potential clients to create projects that could be published and exhibited to the general public. The first built works of the Case Study Program saw more than 350,000 visitors collectively. 36 designs were penned in the project’s more than 20 year history.
**Precedent Analysis**

**UT Solar Decathlon 2009**

**Pierre Koenig**

**Case Study House #21 | Bailey House | Hollywood | 1958 - 1959**

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01 Population Density

2000 Census Bureau map showing the population density of the state of California. Los Angeles has a population density of more than 5000 people per square mile on average.

02 Proximity

Relative locations of Koenig’s prominent works in the Los Angeles / Hollywood area. The Hollywood Hills are rich with works by many of the modern Southern California architects of the Twentieth Century.
Above: Aerial perspective rendering of CSH #21 illustrating how the structure is integrated with the landscape.  
Top right: The western façade of the house is closed to protect against afternoon sun and obscure the view of sparse shrubbery on the hillside.  
Bottom right: The eastern façade of the house is entirely closed to prohibit views from the approaching road.  The façade’s only opening reveals the entry between the house and the covered carport. It is adjacent to a steel framed platform of red brick pavers that is raised above one of the many shallow reflecting pools that encircle the house.

Above: Aerial perspective rendering of CSH #21 illustrating how the structure is integrated with the landscape.  
Top right: The western façade of the house is closed to protect against afternoon sun and obscure the view of sparse shrubbery on the hillside.  
Bottom right: The eastern façade of the house is entirely closed to prohibit views from the approaching road.  The façade’s only opening reveals the entry between the house and the covered carport. It is adjacent to a steel framed platform of red brick pavers that is raised above one of the many shallow reflecting pools that encircle the house.
Spartan Simplicity:

The house is oriented on the north-south axis and is open in these directions. Entry is from the north between the main body of the house and the carport to the northern most end.

The southern elevation is left completely open to maximize views.

The east and west facades of the house are closed to protect from the approaching on the east and to shield views of the sparse growth on the hillside to the west.

The house is essentially an island scheme, being surrounded by shallow reflecting pools on all sides. Pools are bridged by raised platforms of red brick pavers framed in steel.

The public zone of the kitchen and the main living area are located to the east of the plan and are separated from the two bedrooms to the west. The separation of these two public and private zones is created by a small central court whose solid walls form the two bathrooms.

Creation of a partially glazed interior courtyard allowed bathrooms to be placed free of the exterior walls. This made it possible to have completely glazed curtain walls wherever necessary.

Arts and Architecture Magazine editor called CSH #21 "some of the cleanest and most immaculate thinking in the development of the small contemporary house."
Openness of Design:

The houses’ orientation is on the north-south axis with all openings on these two sides. The photos above illustrate how the large walls of glass and the lack of interior partitions serve to bathe the interior of the house in natural light. In the center photo, one can see the small interior court that contains the primary mechanical systems and is flanked on two sides by the bathrooms. The court allows light into the center of the house while providing physical separation between the two bedrooms and the more public spaces.
Steel Skeleton

The house is framed using four double span steel bents (prefabricated rectangular frames) 44 feet wide and 9 feet high.

3 bents of half the width compromise the frame for the entrance and carport.

Columns are 4 inch H sections.

Beams are 8 inch I sections.

The steel skeleton is based on a 10 foot module that proved more economical than 4 foot and 8 foot modules that were common at the time.

Prefabricated bents were erected on a poured concrete slab then welded in place of the steel plates used during shop assembly. The rough boltheads were then burned off and ground smooth.
Steel and Glass Infill

The exterior walls are made of 10 foot panels of the same 6 inch corrugated steel decking as the roof, or of 10 foot sliding glass doors and windows. The sliding glass walls are a standard industrial size to cut down on construction costs. The inside of each 18 gauge steel decked wall is covered in laminated gypsum board left exposed and painted. All conduits, ducts, and drains were installed on the interior of the steel and gypsum wall section.
Hydraulically pumped water

The walls also contain pipes that allow water from the surrounding reflecting pools to be pumped onto the roof and circulated as a strategy for passive cooling.

Water is then cycled back through scuppers on the sill that serves functionally to aerate the pool and formally to soften the starkness of the house’s rigid geometry.
Steel members allow large interior spans devoid of any structural walls or columns. Steel roof decking makes a continuous surface across the ceiling. Steel decking is painted white to match the white gypsum board walls. This is in stark contrast to the black paint applied to the structural system both inside and out. Exterior surfaces of steel decking are also painted white to help maintain continuity. Floors are polished concrete and covered in pile carpet to aide acoustics. Interior court is tile and frosted glass for privacy in the baths. Kitchen is enameled steel and stainless steel. Sliding glass walls are standardized sizes.