

Wailoa Bridge
Kamehameha Avenue spanning Wailoa River
Hilo
Hawaii County
Hawaii

HAER No. HI-4

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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Western Region
Department of the Interior
San Francisco, California 94102

HISTORIC AMERICAN ENGINEERING RECORD

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Wailoa Bridge

HAER No. HI-4

Location: Spanning the Wailoa River at Kamehameha Rier
Hilo, Hawaii County, Hawaii

UTM: 05.282710.2182430
Quad: Hilo

Date of Construction: 1937-38; foundation repaired in 1975

Present Owner: State of Hawaii
Department of Transpotation
869 Funchbowl Street
Honolulu, Hawaii 96813

Present Use: Vehicular and pedestrian bridge. Accommodates small
boat navigation on the river.

Significance: Wailoa Bridge and Kamehameha Avenue originally served
as the main traffic artery connecting Wainaku Sugar
Mill and Kuhio Wharf. Presently, it serves as a major
transportation link between Hilo and the rest of the
island.

Prepared by: Highways Division
Department of Transportation
State of Hawaii
June 1985

Edited and
Transmitted by: Jean P. Yearby, HAER, 1987

The Wailoa Bridge, also known as the Kamehameha-Wailoa Bridge, is situated over the Wailoa River near the river mouth and is a part of the Kamehameha Avenue roadway in Hilo, Hawaii.

The bridge was constructed in 1937-38 as a WPA (Works Progress Administration) project. The project engineer was William H. Chun, C.E., of the county of Hawaii and the county engineer for Hawaii was Mr. E. L. Wung. Mr. Samuel Spencer was the Chairman and Executive Officer for the Board of Supervisors, County of Hawaii.

It is 70 feet wide, consisting of two 10 foot sidewalks and 50 foot travelway. The overall length of the structure is about 135 feet with a navigational channel width of 88 feet, from abutment to abutment.

The abutment foundation system consists of a series of 16-inch square reinforced concrete piles on the west side and spread footings on the east side.

The superstructure of the bridge consists of 11 arched concrete girders spanning the width of Wailoa River, approximately 88 feet. The arched girders are tied together by an 8-inch thick reinforced concrete deck slab. Diaphragms spaced at 10 feet on center between the arched girders provide the bridge structure with waffle-like appearance. Girders are 7 feet deep at the haunch and tapers to a depth of approximately 2-1/2 feet at the centerline or crown of the structure, which provides a maximum clearance of 11 feet (above mean sea level) for the navigational traffic. The girders are 24-inches wide with 6x6' fillet located at the girder-to slab interface. Square bars are used as the principle reinforcement in the deck slab and girders. Round reinforcing bars are used for stirrups and temperature steel. The basic framing system is considered an arched frame with pinned supports, which is the only bridge on the island of Hawaii to employ this type of engineering design. The construction plans indicate spindle balusters for handrails; however, actual bridge railings constructed are plain rectangular balustrades.

Since its construction in 1938, the Wailoa Bridge has withstood two of the most devastating tsunamis (great sea waves produced by submarine earth movement or volcanic eruption) in the recorded history of Hawaii. On April 1, 1946, a tsunami originating in the East Aleutian Islands caused 173 deaths and \$26 million in property damage to the Hilo area. On May 22, 1960, an earthquake in South Chile generated a tsunami that reached Hawaii in the early morning hours of May 23. This tsunami caused \$23 million property damage in Hilo and took 61 lives.

The physical appearance of the bridge has changed very little since its construction. The most noticeable change in appearance is that the original lamp posts were washed away by a tsunami and were never replaced. The 1960's tsunami destroyed approximately 56 linear feet of the bridge's north railing. The highway maintenance force repaired the damage and returned the railing to its original appearance.

The most significant change affecting the bridge is not easily noticeable. The foundations for both bridge abutments have been eroded over the years and, after two devastating tsunamis, to such an extent that it poses structural problems. Although the Highway Division undertook emergency remedial repair work in 1975 to stabilize the scouring at the foundation on the east abutment, the work did not completely rectify the structural deficiencies.

The Wailoa Bridge was determined eligible for inclusion in the National Register of Historic Places by the Keeper of the National Register on July 1, 1981.