

QUEEN STREET BRIDGE
Nimitz Highway west bound and Nuuanu Stream
Honolulu
Honolulu County
Hawaii

HAER No. HI-126

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
U.S. Department of the Interior
National Park Service
Oakland, California

HISTORIC AMERICAN ENGINEERING RECORD

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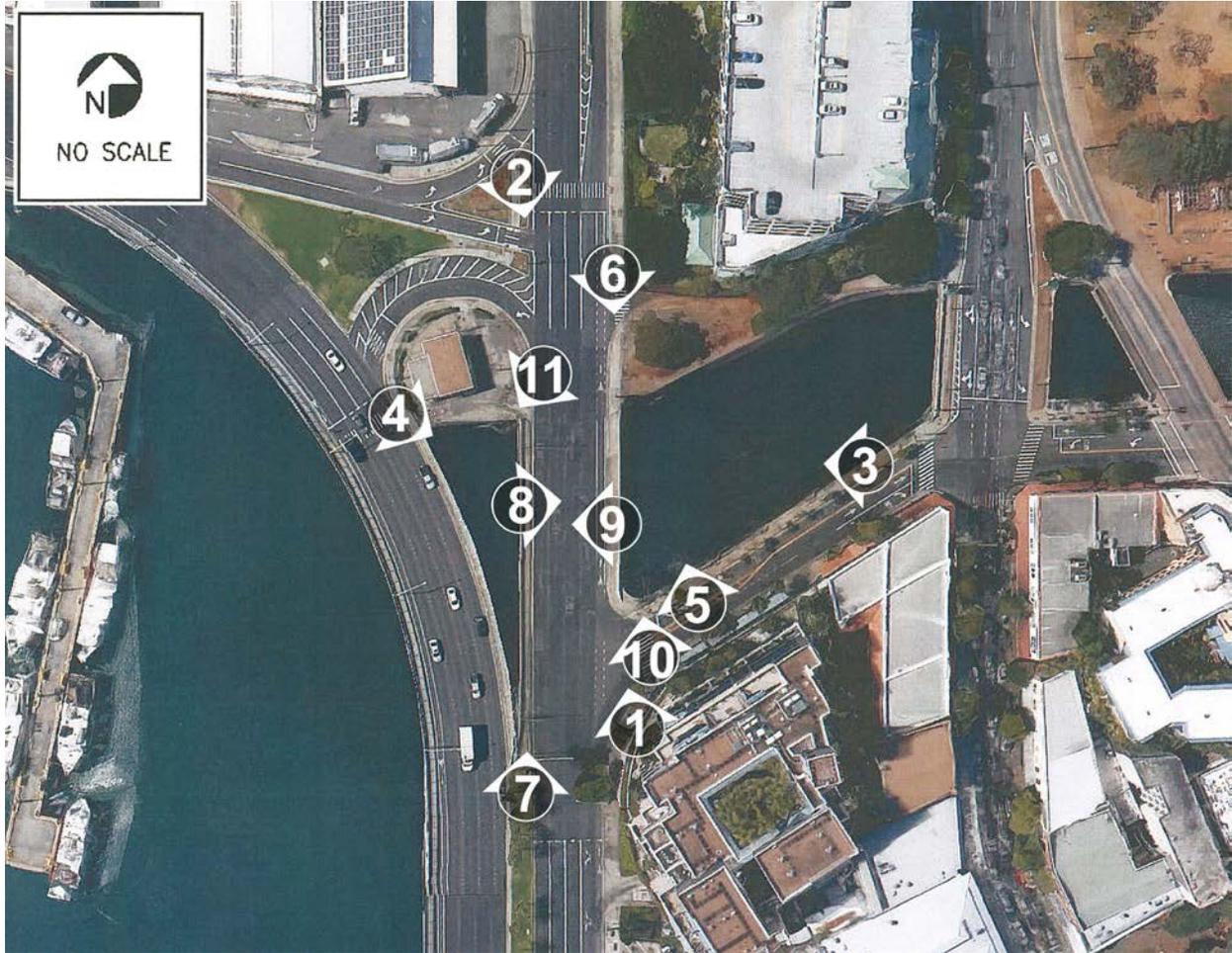
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Silverhouse Photographic, Athens, GA, Photographer

August 2012

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PHOTO KEY



HISTORIC AMERICAN ENGINEERING RECORD

QUEEN STREET BRIDGE

HAER No. HI-126

- Location:** Nimitz Highway west bound and Nuuanu Stream
Honolulu
City and County of Honolulu, Hawaii
U.S.G.S. Topographic map, Honolulu Quadrangle 1998 (7.5 minute series)
Universal Transverse Mercator Coordinates NAD 83:
04.617700.2357250
- Present Owner:** State of Hawaii
- Present Use:** Vehicular Bridge
- Significance:** The Queen Street Bridge is significant for its association with the history of Oahu's road transportation network, particularly for its contribution to the development of Queen Street, an important transportation arterial from Honolulu's downtown and harbor areas into the industrial area of Iwilei, and points further northwest. The bridge is also significant as the only known example of a concrete bridge on Oahu featuring a solid parapet design with a rounded parapet top rail and contoured end stanchions.
- Historian (s):** Dee Ruzicka and Polly Tice
Mason Architects, Inc.
119 Merchant Street, Suite 501
Honolulu, HI 96813
- Project Information:** This Historic American Engineering Record (HAER) report is part of the documentation for properties identified as adversely affected by the Honolulu Rail Transit Project (H RTP) in the City and County of Honolulu. This documentation was required under Stipulation V.C. (1, 2) of the Honolulu High-Capacity Transit Corridor Project (HHCTCP) Programmatic Agreement (PA), which was signed by the U.S. Department of Transportation's Federal Transit Administration, the Hawaii State Historic Preservation Officer, the United States Navy, and the Advisory Council on Historic Preservation. After consultation with the City and County of Honolulu, the National Park Service, Pacific West Regional Office, in a letter dated June 29, 2011, stipulated the details of the required documentation efforts, including HAER documentation for this and other bridges affected by the H RTP. Archival photographs were taken in August 2012 by Silverhouse Photographic, Athens, GA. The field work was conducted in December 2015 and the report was prepared in December 2015.

Part I. Historical Information

A. Physical History:

1. **Date of construction:** 1932
2. **Engineer(s):** George K. Dawson. Robert S. Mowry, City and County of Honolulu Engineer. Herbert A.R. Austin, Chief Engineer, Department of Public Works, City and County of Honolulu.

The City and County drawings for the bridge are dated 1932 and indicate that the engineer was "G. K. Dawson." ¹ George K. Dawson was a structural engineer for the City and County of Honolulu. He served as engineer for the extant steel through-deck Warren truss Karsten Thot Bridge (built in 1932) over the Wahiawa Reservoir,² as well as for the Kapalama Canal Bridge (built in 1930), both on Oahu.

City and County Engineer Robert S. Mowry signed and approved the Queen Street Bridge construction drawings. Mowry was a graduate of the Van Der Naillen School of Engineering in California. The City and County of Honolulu named him project engineer for the Honolulu Engineering Department in 1925, and five years later he was promoted to Chief Engineer of Plans and Specifications (replacing D. F. Balch). He retired from his position with the City in 1945, and later took a job with Austin and Towill, local engineering architects. He was later named as consulting civil engineer for R. M. Towill Corporation, one of Austin and Towill's successor firms.³

Herbert A. R. Austin, Chief Engineer, Department of Public Works also signed and approved the drawings. He was remembered at the time of his death as a "prominent *kamaaina*" (Hawaiian term meaning long-term resident of the Hawaiian Islands) and an "outstanding engineer." Austin was born in Hilo, Hawaii, received a degree in civil engineering at Cornell University in 1913, and was appointed the first Chief Engineer of the City and County Public Works Department in 1927. After this position, Austin spent two years in private practice, followed by a second appointment in 1931 as the Chief Engineer for the City and County. In 1934, he founded H. A. R. Austin, Consulting Engineer. From 1942 to 1959, Austin partnered with Roswell M. Towill in a joint venture under the name of Austin and Towill. After Towill left the firm in 1959, Austin and Towill was reorganized by Donald S. Austin and Russell L. Smith, Jr., and later incorporated as Austin, Smith and Assoc., Inc. In 1975, Caesar Tsutsumi joined the firm, and since that time the firm has been known as Austin, Tsutsumi & Associates, Inc.⁴

3. **Builder/ Contractor/ Supplier:** Hawaiian Contracting Co., builder.
4. **Original plans and construction:** Original drawings were prepared by the Office of the City & County Engineer, Honolulu, Hawaii. They are titled, "Queen Street Bridge (Nuuanu Stream)," and are dated August 1, 1932. The plans were approved by Robert S. Mowry, the City & County Engineer, and by Herbert A. R. Austin, Chief Engineer, Department of Public Works.

¹ Drawings "Queen Street Bridge, Nuuanu Stream," seven drawing set #s 4-285 through 4-291, dated August 1, 1932. From City & County of Honolulu Municipal Reference and Records Center, City & County Archives.

² MKE Assoc. *Historic Bridge Inventory*. P. 4-89 to 4-90.

³ Newspaper articles on Mowry at the University of Hawaii, Hamilton Library, Honolulu Newspaper Clippings Morgue, on microfiche in Biographical section under: Mowry. Various Dates.

⁴ Newspaper articles on Austin at the University of Hawaii, Hamilton Library, Honolulu Newspaper Clippings Morgue, on microfiche in Biographical section under: Austin. Various Dates.

- 5. Alterations and additions:** At an unknown date, the *makai* (common Hawaiian term meaning "in the direction of the sea") parapet of the Queen Street Bridge was altered, including replacement of both end stanchions. About 120' of the *makai* parapet was removed from the north end, and the end stanchion was rebuilt in its present position, about 22' north of the original (3' long) stanchion. On the south end of the *makai* parapet, about 43' feet of parapet was added and the end stanchion was rebuilt. The alteration of the north end likely occurred ca. 1954 when the adjacent Awa Street Wastewater pumping substation was constructed.

B. Historical Context:

Early Passage over Nuuanu Stream

The Queen Street Bridge was built to carry Queen Street over Nuuanu Stream. The passage northwest over Nuuanu Stream from Honolulu has long been an important route, and an early (1840) bridge across the stream along the Beretania Street right-of-way was probably "the first major span in the islands."⁵ This crossing was important enough that successive bridges at Beretania and King Streets were quickly rebuilt when carried away by the flood waters that would periodically wash down Nuuanu Stream.⁶

Queen Street was established in the early 1840s after the *Kahina Nui* (a Hawaiian political office similar to a Prime Minister) Kinau "ordained the construction of 'five streets on the length of the land and six streets on the breadth of the land,'" which included Queen Street along with Merchant Street, King Street, Hotel Street, Beretania Street, Punchbowl Street, Richards Street, Alakea Street, and Nuuanu Avenue.⁷ Originally, Queen Street began at the Honolulu Fort, and extended eastward. From the fort west to Nuuanu Stream, the alignment of the future Queen Street was the shoreline (labelled as "beach" on a 1843 map). By about 1880, the shoreline had been hardened with wharfs, and Queen Street was extended west to Kekaulike Street. By 1897 Queen Street ended at River Street, which extended *mauka* (common Hawaiian term meaning "in the direction of the mountains") along the east bank of Nuuanu Stream.

The earliest bridge across Nuuanu Stream at Queen Street appears to have been built sometime between 1897 and 1905, when Queen Street was extended into Iwilei from downtown Honolulu. This extension of Queen Street across Nuuanu Stream provided direct passage between the Honolulu waterfront and the industrial area of Iwilei. Formerly, this traffic had to cross the stream at King Street.⁸ This early bridge carried two lanes of traffic, and was likely wood,⁹ and was reconstructed as early as 1906.¹⁰

⁵Robert C. Schmitt, "Early Hawaiian Bridges," *The Hawaiian Journal of History*, Vol. 20, 1986. P. 152.

⁶ Schmitt, "Early Bridges," P. 152 & 153.

⁷ Charles E. Hogue, "Street That Oxen Laid Out," *Honolulu Advertiser*, January 26, 1950. P. 8.

⁸ M. D. Monsarrat, map "Honolulu, Hawaiian Islands," 1897, and Charles V.E. Dove, "Map of Honolulu, Hawaiian Islands," 1912.

⁹ The wood construction material is evidenced by a 1924 photo ("King St. Bridge No. 2" April 1924, in Hawaii State Archives folder PP-6-1) that appears to show a wood guardrail, as well as the 1932 plans for the Queen Street Bridge (Drawing 4-285, "Queen Street Bridge (Nuuanu Stream) Location Plan" August 1, 1932 in City & County of Honolulu Municipal Reference and Records Center, City & County Archives), which show timber piles as the support for the previous bridge. A 1930 aerial photo (11th Photo Section Air Corps US Army "Mosaic of the City of Honolulu" 1930, in Hawaii State Archives folder PPO-42) appears to show Queen Street as two lanes over the bridge.

¹⁰William Savidge, *Journal of the Senate, Prepared for the Fourth Legislature of the Territory of Hawaii, Regular Session 1907* (Honolulu: Hawaiian Star Print) 1907. P. 133.

Construction of the Queen Street Bridge

By the 1930s, Queen Street included two separate segments whose juncture was interrupted by the Oahu Railway & Land Co. (OR&L) Depot in Iwilei. The west segment was originally a seven block section in Kalihi between Puuhale and Waiakamilo Roads; however, in the early 1930s it was in the process of being extended eastward to meet King Street, just north of the OR&L Depot. The west extension of Queen Street was approximately 1½ miles. The east segment of Queen Street started at Iwilei Road at the OR&L Depot, and continued into Kakaako, terminating in the vicinity of Kamakee Street. This segment was less than 2 miles in length, and was predominantly an inland corridor except for a short section in the downtown Honolulu Harbor area, which crossed Nuuanu Stream, and passed by Piers 11 through 15.

When built, the passage west from downtown Honolulu was one of the most important corridors on Oahu. The Queen Street Bridge was one of six bridges that carried pedestrian and vehicular traffic in and out of downtown over Nuuanu Stream (including Queen Street, King Street, Beretania Street, Kukui Street, Vineyard Street, and School Street). Foot traffic would have been especially heavy across these bridges on the weekends as it was customary for plantation workers from outlying areas of Oahu to ride the OR&L lines into Honolulu to do their shopping on Saturdays. Disembarking the railcars at the OR&L Depot in Iwilei, it was a short walk across Nuuanu Stream to Chinatown.

The Hawaiian Contracting Company built the Queen Street Bridge in 1932 to replace an earlier bridge. The company was formed by Walter F. Dillingham and associates in 1918. (Walter Dillingham had taken over as OR&L Co. Chief Financial Officer in 1904.) The contracting company supported OR&L Co. construction projects, and erected many bridges throughout the Hawaiian Islands in the 1930s. Other bridges included the 1933 Kipapa Bridge (over the Kipapa Gulch), Wahiawa, Oahu,¹¹ the 1933 Alae (Naalae Gulch) Bridge, Kula, Maui,¹² and the 1936 Waialae Drive Bridge, in Wailuku, Maui.¹³ The 2014 State Historic Bridge Inventory and Evaluation lists the Hawaiian Contracting Co. as an important builder of reinforced concrete deck bridges.¹⁴

Makai Arterial

In the mid-1940s, automobiles traveling the *makai* route between Pearl Harbor and Waikiki experienced a bottleneck at Queen Street between the downtown area and Iwilei. The *Makai* Arterial, a limited access highway, was developed to resolve the traffic problem, specifically to "ease travel between Pearl Harbor and Honolulu and between the airport and harbor and the Waikiki hotel district."¹⁵ Initially conceived as the eight-lane Honolulu to Pearl Harbor Road (and later named Nimitz Highway), the Annual Report of the [Territorial] Department of Public Works later reported that the "Makai Arterial got its start in 1942, when an improvement of the road from Pearl Harbor Gate to Pearl Harbor Junction went under construction. Since then successive contracts have been let on construction of a new, wide, limited access highway from the gates of Pearl Harbor to Kalakaua Avenue."¹⁶

¹¹ MKE Associates, LLC and Fung Associates, Inc., *Hawaii State Historic Bridge Inventory and Evaluation*, (Honolulu: State of Hawaii, Department of Transportation, Highways Division) 2014. P. 4-109 to 4-111.

¹² MKE Assoc. *Historic Bridge Inventory*. P. 5-25 to 5-27.

¹³ MKE Assoc. *Historic Bridge Inventory*. P. 5-181 to 5-182.

¹⁴ MKE Assoc. *Historic Bridge Inventory*. P. 1-34.

¹⁵ Superintendent of Public Works, *Report to the Governor, Territory of Hawaii, for the Year Ending June 30, 1952*. (Honolulu: Territory of Hawaii Department of Public Works). P. 3.

¹⁶ Superintendent of Public Works, *Report to the Governor, June 30, 1952*. P. 12.

The Department of Public Works executed contracts with various construction companies for different portions of the arterial. Hawaiian Dredging Co., Ltd. was responsible for the segments at the Queen Street Bridge. Formed by Walter F. Dillingham in 1902, Hawaiian Dredging Co.'s initial project was to widen the main channel at Pearl Harbor. The company subsequently built Dry Dock #1 at Pearl Harbor in 1909. In the 1920s, they constructed the Ala Wai Canal in Honolulu, and started doing general contracting work. During the 1930s, Hawaiian Dredging Co. built many bridges, and reshaped the landscape and waterways throughout the Hawaiian Islands on projects at Honolulu Harbor on Oahu, and the ports of Kahului, Maui and Hilo, Hawaii. Hawaiian Dredging Co. built the Iwilei section of the *Makai* Arterial at a cost of \$1,484,305.70, and the Queen Street section at a cost of \$642,826.80.¹⁷ (After World War II, Hawaiian Dredging Co. merged with Hawaiian Contracting Co. to become Hawaiian Dredging Construction, Ltd.¹⁸ Following statehood in 1959, the company built the Honolulu International Airport, the Ala Moana Shopping Center, and numerous residential and commercial high rises and hotels. The company is still active in the construction industry today, as "Hawaii's oldest and largest full-service construction company."¹⁹)

In March 1947, the approximate four mile section of the Honolulu to Pearl Harbor Road that was newly built between Waiakamilo Road and the Pearl Harbor gate was given the name "Nimitz Highway." "Nimitz Highway" was later applied to the easterly sections of this road, as they were built, from Waiakamilo Road to Fort Street where it connected to Ala Moana Boulevard (originally called "the Ala Moana").

Plans for the *Makai* Arterial evolved over time. The Territorial Department of Public Works and the City and County of Honolulu disagreed on the exact configuration of the arterial, including whether any portion of the new road should be elevated. They reached a partial accord in March, 1948, that settled on the current at-grade street layout in the section between River Street and Prison Road in Iwilei, which includes the Queen Street Bridge. In this agreement, Prison Road became the westbound lanes of Nimitz Highway through Iwilei, while the eastbound traffic was carried on newly constructed lanes *makai* of Prison Road. The Queen Street Bridge carried the westbound traffic to its junction with Prison Road.

Construction of the westbound sections of Nimitz Highway east and west of the bridge were completed in 1952,²⁰ including the six- and eight-lane portion near Fort Street and Ala Moana Boulevard, and the Awa Street section in the Iwilei district.²¹ Also completed in 1952 was the eastbound Nimitz Highway bridge over Nuuanu Stream immediately *makai* of the Queen Street Bridge. When this eastbound bridge opened, traffic over the 1932 Queen Street Bridge became westbound only.

Subsequent plans for additions to the *Makai* Arterial in the mid-1950s included possible elevated sections along Ala Moana Boulevard (including within Ala Moana Park), as well as an elevated segment that headed inland to connect with the *Mauka* Arterial (later expanded, and known today as the H-1 Freeway). However, these did not come to fruition.

¹⁷ Superintendent of Public Works, *Report to the Governor, Territory of Hawaii, for the Year Ending June 30, 1951*. (Honolulu: Territory of Hawaii Department of Public Works) P. 40.

¹⁸ "Our History," website www.hdcc.com/about-2 accessed on December 9, 2015.

¹⁹ History of Hawaiian Dredging Construction Company, Inc. from company website, <http://www.hdcc.com/company/company.html> Accessed on April 1, 2013.

²⁰ "Makai Arterial Construction in Final Stage," *Honolulu Advertiser*, March 2, 1952. P. 9.

²¹ "Makai Arterial," *Honolulu Advertiser*, March 2, 1952. P. 9.

Tee-Beam Bridges on Oahu

Concrete tee-beam bridges are the most common type of extant pre-World War II bridges in the State of Hawaii.²² They are a part of the evolution of reinforced-concrete deck bridge technology in Hawaii that began with the first slab bridges around 1908. Often County-designed, these early slab bridges frequently consisted of concrete decks that replaced older superstructures that were built on their original stone abutments, which were often lava rock and mortar.

The design of reinforced-concrete deck bridges progressed rapidly during the first decades of the 20th century.²³ The strength of concrete girder and tee-beam types, and their lower cost, led to their use in locations with short spans, rather than the concrete-arched types.

Although the earliest tee-beam bridges in Hawaii date from about 1912, after about 1925 this bridge type became the preferred choice for bridge construction by the Territorial Highway Department. The pattern of reinforcing steel within their girders is the feature that most distinguished the tee-beam type from other concrete girder bridges. Changing the arrangement of the reinforcing steel in the girders and deck, from the configuration used in earlier concrete girder bridges, served to structurally join the two²⁴ and allowed the two components to work together: thus, tee-beam bridges could efficiently carry a greater load. This relatively small change over standard girder construction provided an increased carrying capacity, and the tee-beam quickly came into wide use, with examples constructed into the 1950s.

Tee-beam bridges in Hawaii generally had parapets with voids, beneath a reinforced-concrete rail cap. "Several standard rail patterns [were] used by the Territorial Highway Department, including 'Greek-cross', arched, or simple rectangular voids."²⁵ Earlier masonry (lava rock or concrete) bridges typically had solid railings.

The overall length of Queen Street Bridge, 150'-0", places it among the longest for tee-beam bridges on Oahu. However, the 30'-0" distance across each of its five spans is only moderately long for tee-beam bridges on Oahu, as there are several with longer span lengths.²⁶

Solid Parapet Design with Distinctive Detailing

The Queen Street Bridge has an atypical solid parapet design with distinctive molded detailing and rounded top rail. At the time of its construction, the most common parapet design featured narrow, arched-top voids. These first came into use ca. 1930 when they began to replace the typical solid, concrete parapets with rectangular top rails that had been in use since 1918. The solid parapet design of the Queen Street Bridge has a rounded top rail and contoured end stanchions, quite unlike the earlier typical solid parapet design. It is unique to the bridge and is the only known example of this type on Oahu.

Most solid parapet concrete bridges were constructed on Oahu between 1918 and 1938 and was one of the most common types of parapet design utilized during that period. These bridges usually have solid parapets with a balustrade of inset panels that are typically between about 6' and 9' long. These common parapets also feature rectangular-profile top rail and

²² MKE Assoc. *Historic Bridge Inventory*. P. 1-33.

²³ Parsons Brinckerhoff and Engineering and Industrial Heritage, "A Context for Historic Bridge Types," NCHRP Project 25-25, Task 5. (Prepared for the National Cooperative Highway Research Project) October 2005. P. 2-26.

²⁴ Parsons Brinckerhoff, "Context," P. 3-88.

²⁵ MKE Assoc. *Historic Bridge Inventory*. P. 1-30.

²⁶ Bethany Thompson, *Historic Bridge Inventory, Island Of Oahu* (Prepared for the State of Hawaii Department of Transportation, Highways Division). 1983. Sec VII, various pages.

stanchions with hipped upper surfaces. Of the approximately 42 solid parapet bridges built on Oahu between 1918 and 1938, 38 of them are of this typical construction.

Four solid parapet bridges with non-typical parapets were built on Oahu between 1918 and 1938; the Queen Street Bridge, the N. King Street Bridge (1922), the N. Hotel Street Bridge (1936), and the Date Street Bridge (1937).²⁷ Of these, the Queen Street Bridge is notable because of its decorative detailing. It has a rounded top rail with rectilinear moldings joining the top and bottom rails to the un-paneled, smooth finish balustrade. Also non-typical and distinctive of the bridge are the contoured end stanchions, which are formed from a continuation of the rounded top rail, moldings, and smooth balustrade surfaces.

The variation of solid parapet design on the Queen Street Bridge is an important phase in the development of solid parapet bridges on Oahu, occurring toward the end of the period of their common use. It exhibits a design transition between the common paneled solid parapet design and some later solid parapet bridges that featured metal railings (such as the N. Hotel Street Bridge (1936), and Moderne styling such as the Date Street Bridge (1937).

Part II. Structural/Design Information

A. General Statement:

1. **Character:** The Queen Street Bridge is a five-span reinforced concrete tee-beam bridge. It is 150'-0" long between abutments, carrying the west bound lanes of Nimitz Highway over Nuuanu Stream. It is located just west of the downtown waterfront of Honolulu, adjacent to the industrial area of Iwilei. This 1932 bridge has a parapet design that features a rounded top rail and a contoured end stanchion design, which is unique for concrete bridges on Oahu. The individual span length of about 30' is not remarkably long for tee-beam bridges on Oahu.
2. **Condition of Fabric:** Good. Vegetation is visible on some of the concrete piers. There is slight surface spalling, although no exposed rebar was seen. The bridge has moderately high integrity. The *makai* end stanchions have been replaced in-kind. The setting has changed since the bridge was built.

B. Description:

1. **Dimensions:** The Queen Street Bridge measures 70'-0" wide with a roadway length of 150'-0" at the centerline. This overall width includes the 66'-0" width between the parapets with an additional 2'-0" width of each parapet.
2. **Materials:** The bridge is constructed of reinforced concrete, with an asphalt topping on the roadway. Abutments are concrete.
3. **Parapet and Stanchions:** The bridge parapets are 3'-2" high, measured from the top surface of the walkway. The parapets have a rounded design with a solid, un-perforated balustrade. On the roadway side, the bottom rail of the parapet is 8" high and 1'-5" thick. On the bottom rail, a series of three small rectilinear moldings (4½" total) provide transition from the bottom rail to the solid panel of the parapet, which is 1'-7" high and 8" thick. The transition from the top of the solid panel to the top rail consists of two small

²⁷ Thompson, *Historic Bridge Inventory*, 1983. Sec VII, various pages.

rectilinear moldings (3" total). The 1'-2"-wide top rail is 4" high with smoothly radiused sides from the moldings to its slightly rounded upper surface.

The end stanchions of the parapets are each 4'-0" long, and continue the same parapet pattern with rectilinear moldings, solid panel, and rounded top rail. The end stanchions widen slightly, with a top rail width of 1'-7" and a solid parapet thickness of 1'-0".

Typically, concrete bridges of this type and period have date and name inscriptions on their end stanchions, as is the case here. Each end stanchion on the *mauka* parapet is inscribed with "NUUANU STREAM 1932" in 3"-high capital letters. The end stanchions on the *makai* parapet are not inscribed.

On the *makai* parapet, about 22'-0" from the north end stanchion, is one stanchion that is 3'-0" long, with a 1'-7" wide top rail and a solid panel parapet about 10" thick. This stanchion follows the typical pattern of rounded top rail and rectilinear moldings of the bridge parapet. This is the only stanchion (besides the end stanchions) on the bridge; the remaining lengths of both parapets do not have any others.

4. **Superstructure:** The bridge deck has an asphalt-surfaced roadway about 54'-0" wide that carries four lanes of traffic over Nuuanu Stream. At both sides of the roadway are 6'-0" wide concrete walkways set 6" higher, which form the roadway's curbs.
5. **Substructure:** The substructure of the Queen Street Bridge has concrete abutments. Nuuanu Stream below is lined with vertical walls of concrete or quarry faced basalt lava rock masonry with concrete mortar joints that extend from the bridge abutments. The south abutment is set atop a section of wall constructed of basalt masonry with concrete mortar. Four piers extend up from the streambed to support the bridge. They are solid concrete members spaced regularly on 30'-0" centers, to span the width of the bridge. The piers' ends are tapered (both upstream and downstream) to divert water flow, with rounded, stepped moldings near the water line.

C. Site Information:

The Queen Street Bridge is located in the Chinatown Historic District (National Register Item Number 73000658, National Register record number 364413). The bridge lies on the westbound lanes of heavily traveled Nimitz Highway, with Chinatown to the southeast. To the west is the slip of Honolulu Harbor between Piers 15 and 17/18, and to the north is the commercial area of Iwilei. The setting around the bridge has changed since the time of its construction. At that time, Queen Street was only two lanes wide and the bridge fronted the harbor without the intervening Nimitz Highway eastbound bridge (built in 1952). Pier 15 historically extended almost to River Street, and Pier 16 was extant in the adjacent slip, extending south from the north bank almost to Maunakea Street.

Part III. Sources of Information

A. Primary Sources:

Architectural Drawings and Early Views

Original and historic drawings of the Queen Street Bridge are electronic files located in the City & County of Honolulu Municipal Reference and Records Center, City & County Archives.

A series of seven drawings (dwg # 4-285 through 4-291) are dated August 1, 1932. These show the bridge engineer as G.K. Dawson. They drawings are signed by the City & County (Honolulu) Engineer, R. S. Mowry and approved by Chief Engineer, Department of Public Works, H.A.R Austin. Note that these drawings are titled "Queen Street Bridge (Nuuanu Stream)."

A second set of six drawings (dwg # 4-292 through 4-297) are undated. These show the engineer as G.K. D.[Dawson].

An additional drawing (stamped # 17-54, and in the title block numbered either "N-5-2" or "N-S-2") prepared by Hawaiian Contracting Co. is titled "Detail Showing Location of Splices in Sheet Piling – Ewa Wall Queen Street Bridge." The personnel names and dates on the title block are illegible.

Additional drawings are located in the Hawaii Department of Transportation (DOT), Design Section database of drawings. These drawings show several repair projects in proximity to the bridge, and 1990 plans of a roadway resurfacing project (Proj. No. 92A-01-90M) that shows a plan view of the roadway at the bridge.

Historic maps and aerial photos are located in the collection of the Hawaii State Archives. Aerial photos in the collection of the Hawaii State Archives were created under contract for the Hawaii Territorial/ State Land Use Bureau and are in the public domain.

B. Secondary Sources:

Dove, Charles V.E. "Map of Honolulu, Hawaiian Islands," 1912. In map collection of Hawaii State Library, Main Library.

Hawaii Department of Transportation Highway Design Section, Various drawings from database of Highway Design Section. Various Dates.

Heritage Center, School of Architecture, University of Hawaii at Manoa. "State of Hawaii, Historic Bridge Inventory and Evaluation." Draft prepared for the State of Hawaii, Department of Transportation, Highways Division. May 2008.

Honolulu Advertiser

"8 Lane Queen St. Highway to PH Road." February 11, 1947. p. 1.

"PH Road Now Nimitz Highway." March 12, 1947. p. 1.

"Battle Over New Arterial In New Phase." April 18, 1947. p. 11.

- "Survey Shows Need For Two Arterial Roads." November 22, 1947. p. 9.
- "Belt Disagrees With City On Arterial Plan." December 19, 1947. p. 8.
- "Waterfront Arterial Plan Revised Here." January 13, 1948. p. 1.
- "Makai Route Arterial Gets Partial O.K." March 2, 1948. p. 1.
- "Makai Arterial Bids Opened Today." October 25, 1949. p. 9.
- Hogue, Charles E. "Street That Oxen Laid Out," January 26, 1950. p. 8.
- "Waterfront Damage Seen In Arterial." January 26, 1950. Sec. 2, p. 1.
- "Prison Road Part Of Nimitz Highway." October 11, 1950. p. 1.
- "\$612,216 Low Bid For Queen St. Highway." March 1, 1951. p. 1.
- "Makai Arterial Construction In Final Stage." March 2, 1951. p. 9.
- "Competition of Final Contract For Makai Arterial Is Due by October." June 15, 1952. p. 8.
- "Makai Arterial Traffic Pattern Set for Monday." August 1, 1952. p. 11.
- "New Leg Of Nimitz Highway." December 14, 1952. p. 5.

Honolulu Star Bulletin

- "Traffic Survey Set Here To Map Projected Arterial Highways." August 22, 1946. p. 15.
- "Thousands Use Nimitz Highway Every Day (But May Not Know It). August 1, 1947. p. 7.
- "Figures Offered to Prove Worth Of Both Mauka, Makai Arterials." January 30, 1948. p. 3.
- "Route Plans For The Mauka And Makai Arterial Highways." March 3, 1949. p. 1.
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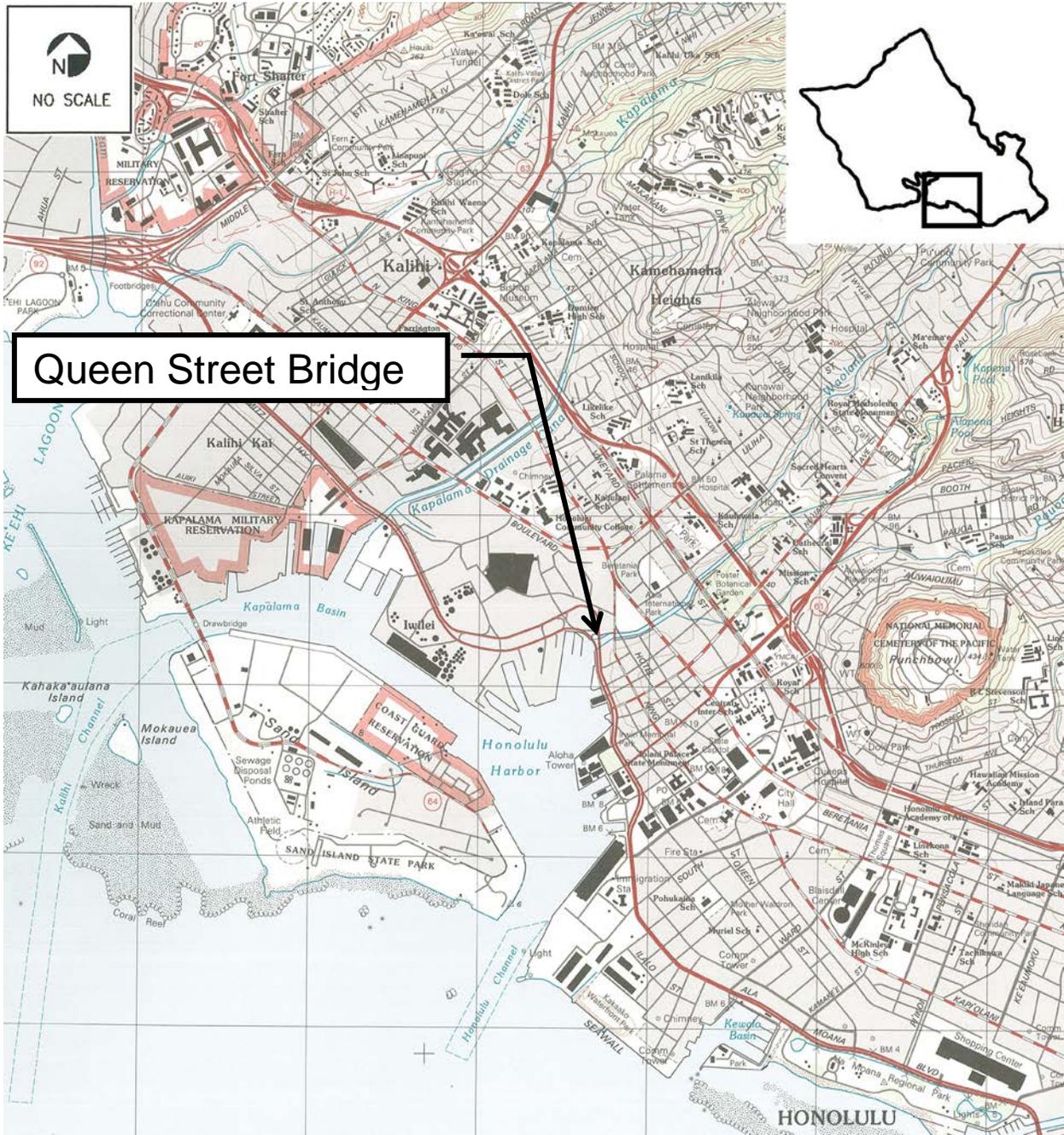
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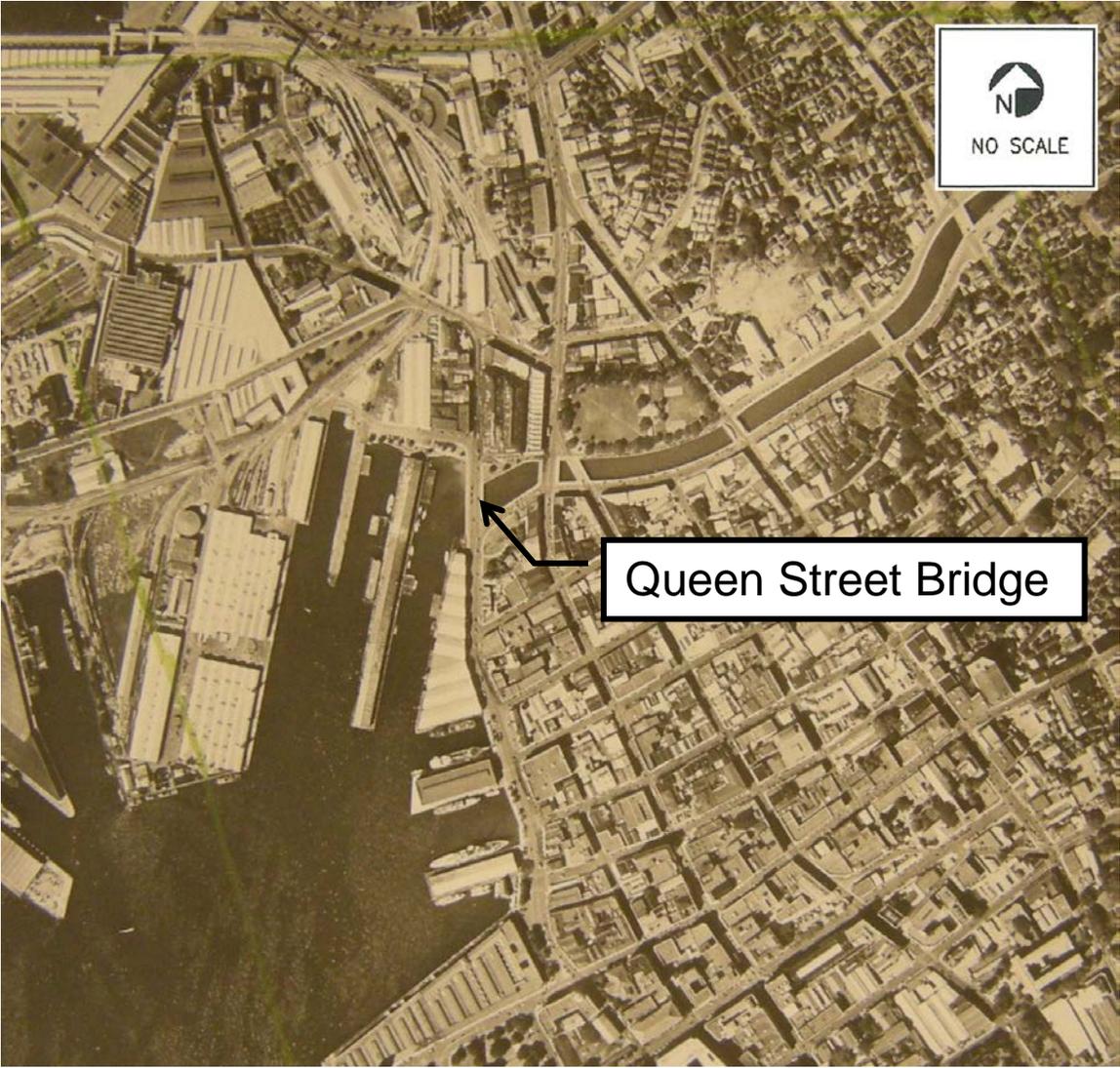
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Newspaper articles on R.S. Mowry and H.A. R. Austin are available at the University of Hawaii at Manoa, Hamilton Library, Honolulu Newspaper Clippings Morgue, on microfiche in Biography section under: Mowry and Austin. Various Dates.

Location Map

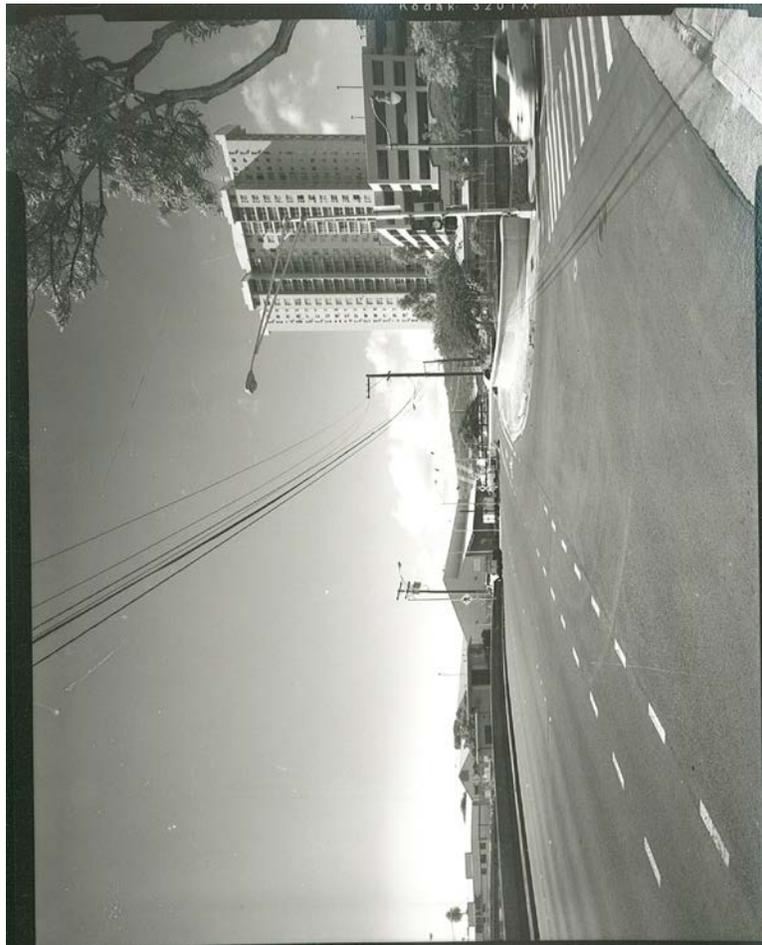


Portion of an aerial photo taken ca. 1939-41 showing the Queen Street Bridge, label added. This photo was taken by the U.S. Army Air Corps and is in the public domain. Hawaii State Archives, folder PPA-58-2, photo M-56.56. Ca. 1939-41.



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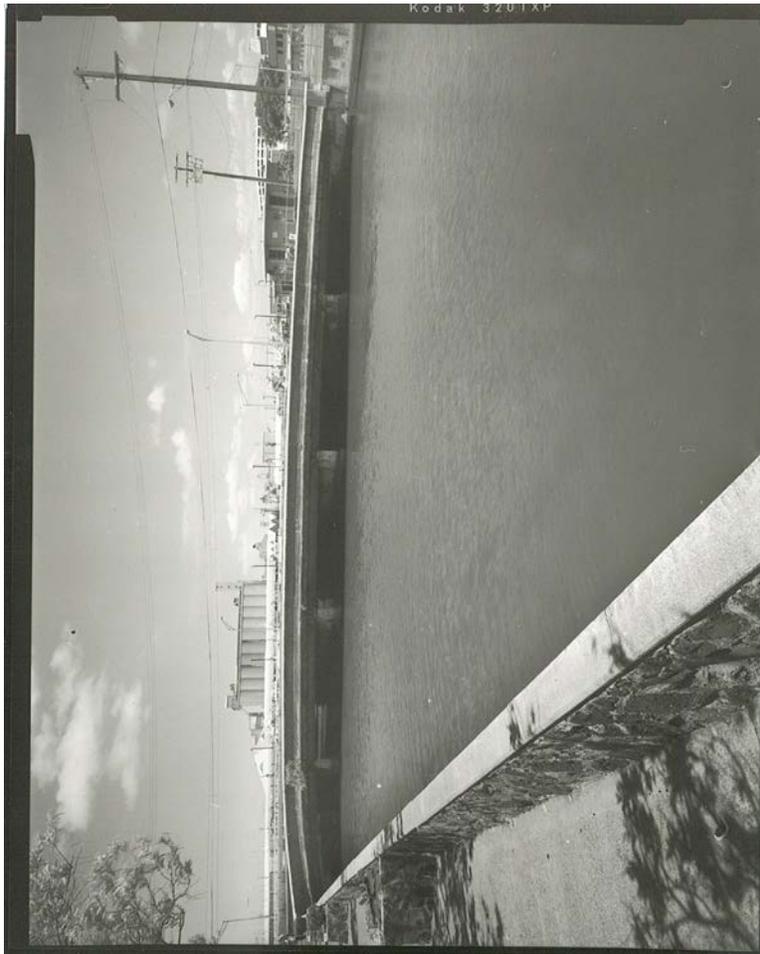
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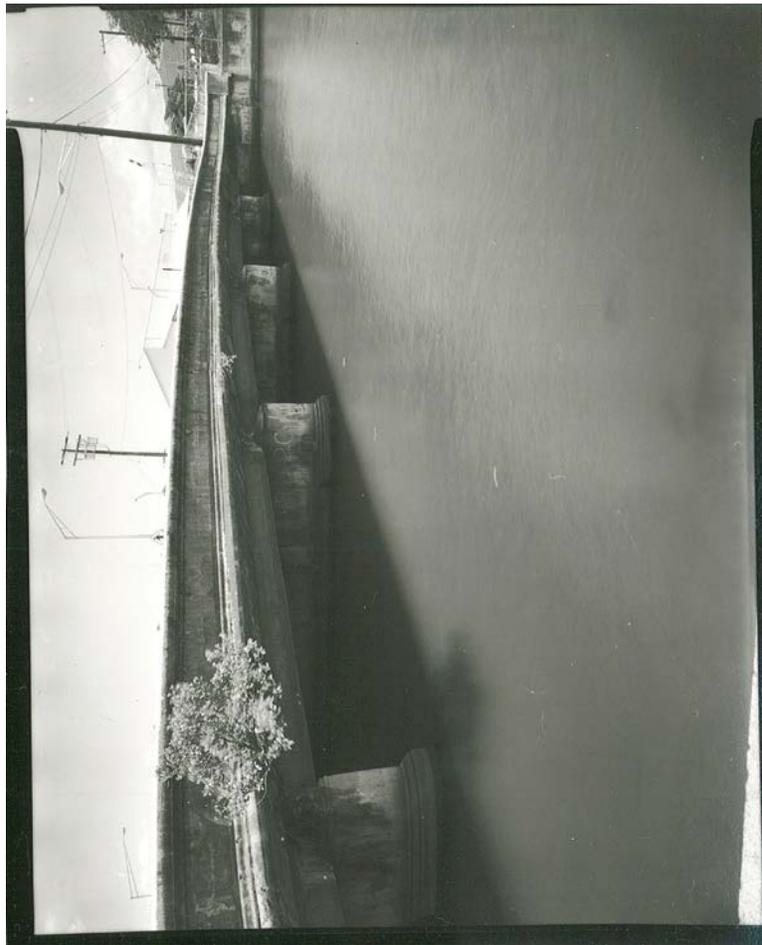
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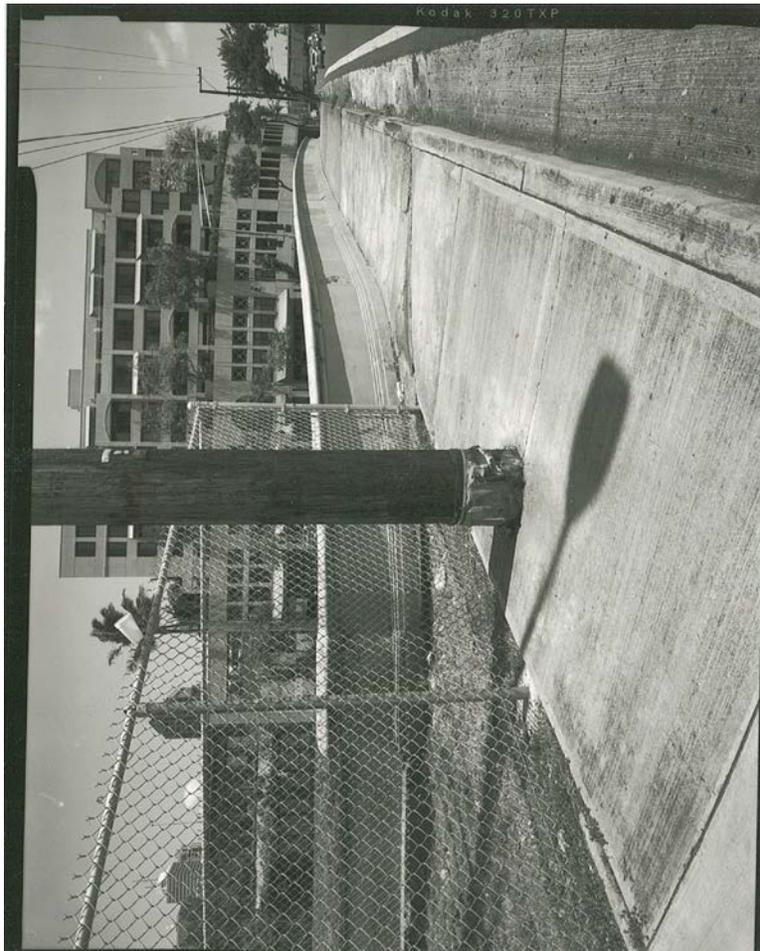
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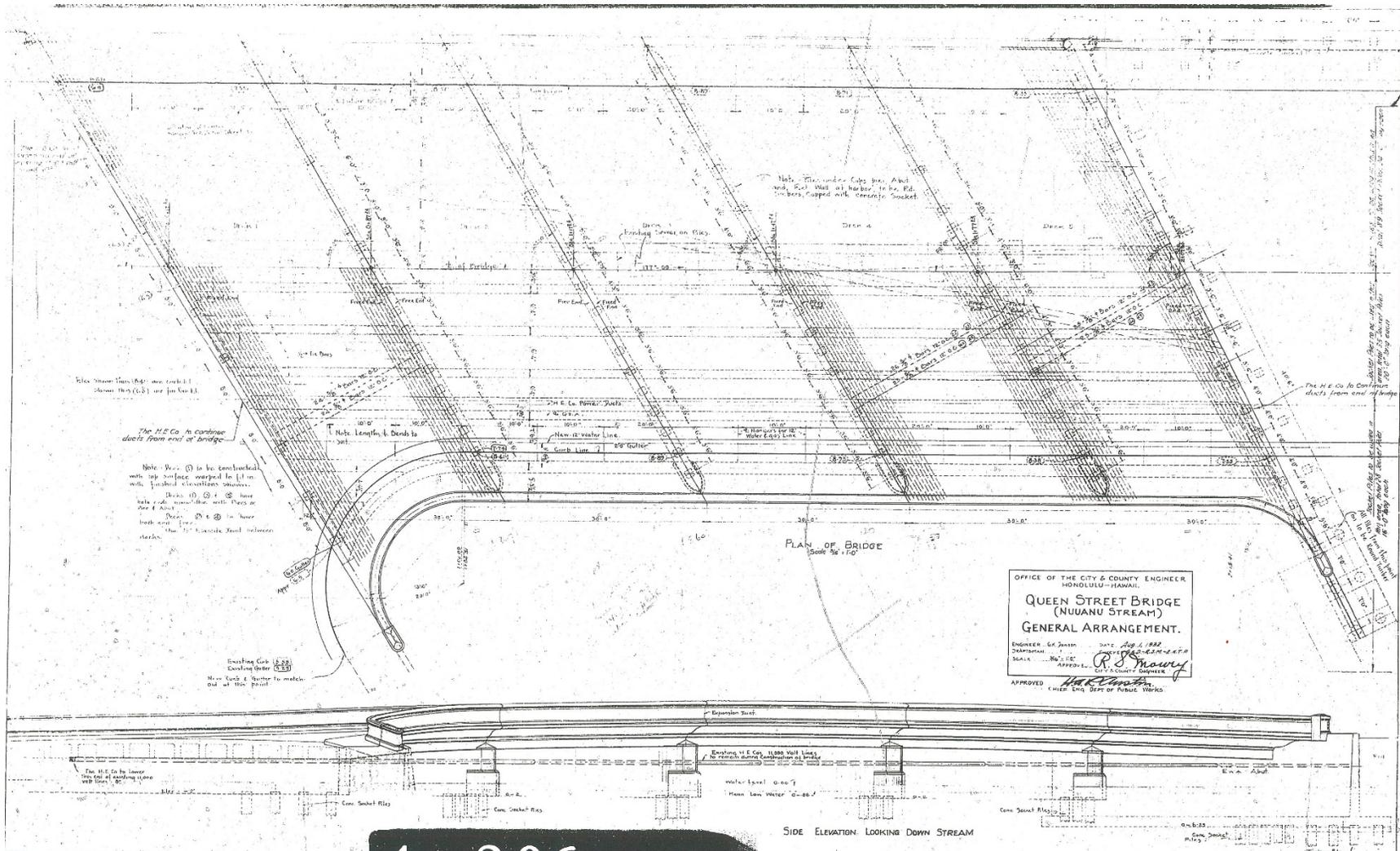


FIELD NOTES

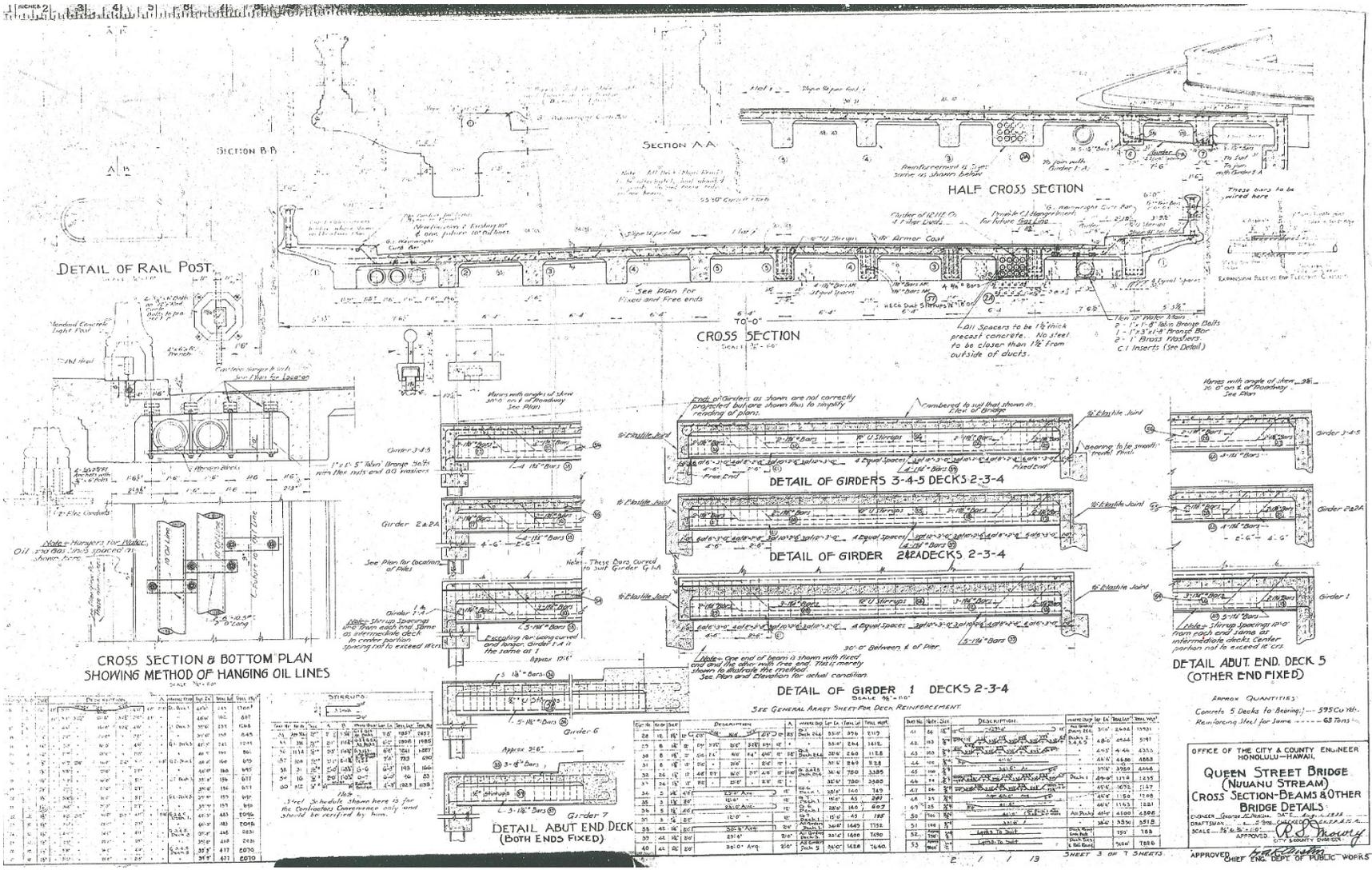
Queen Street Bridge

HAER No. HI-126

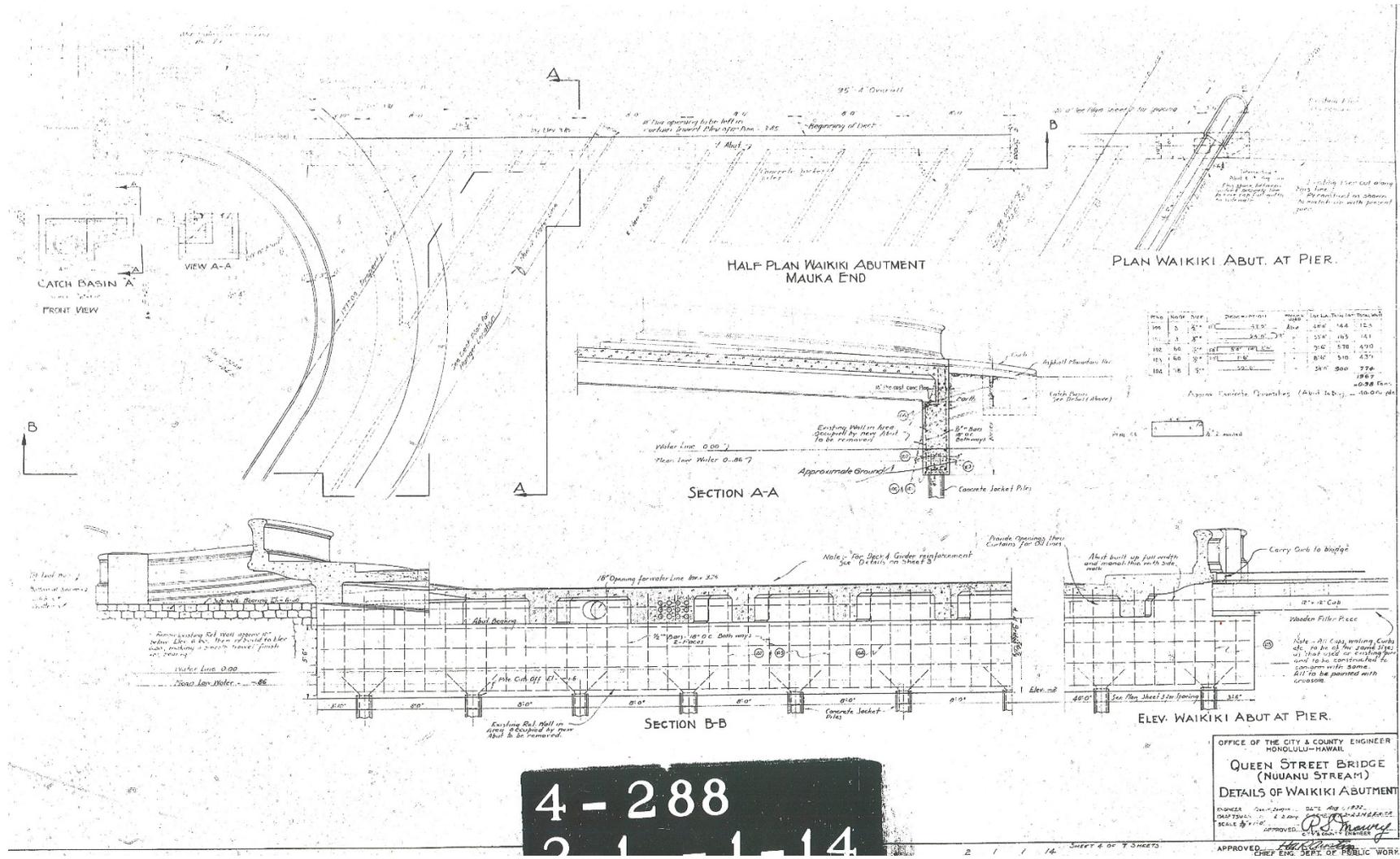
Honolulu, HI



Field Notes: HAER HI-126, Queen Street Bridge. Figure 2: Original drawing prepared by the Office of the City & County Engineer, Honolulu, Hawaii titled, "Queen Street Bridge (Nuuanu Stream), General Arrangement." Dated August 1, 1932.

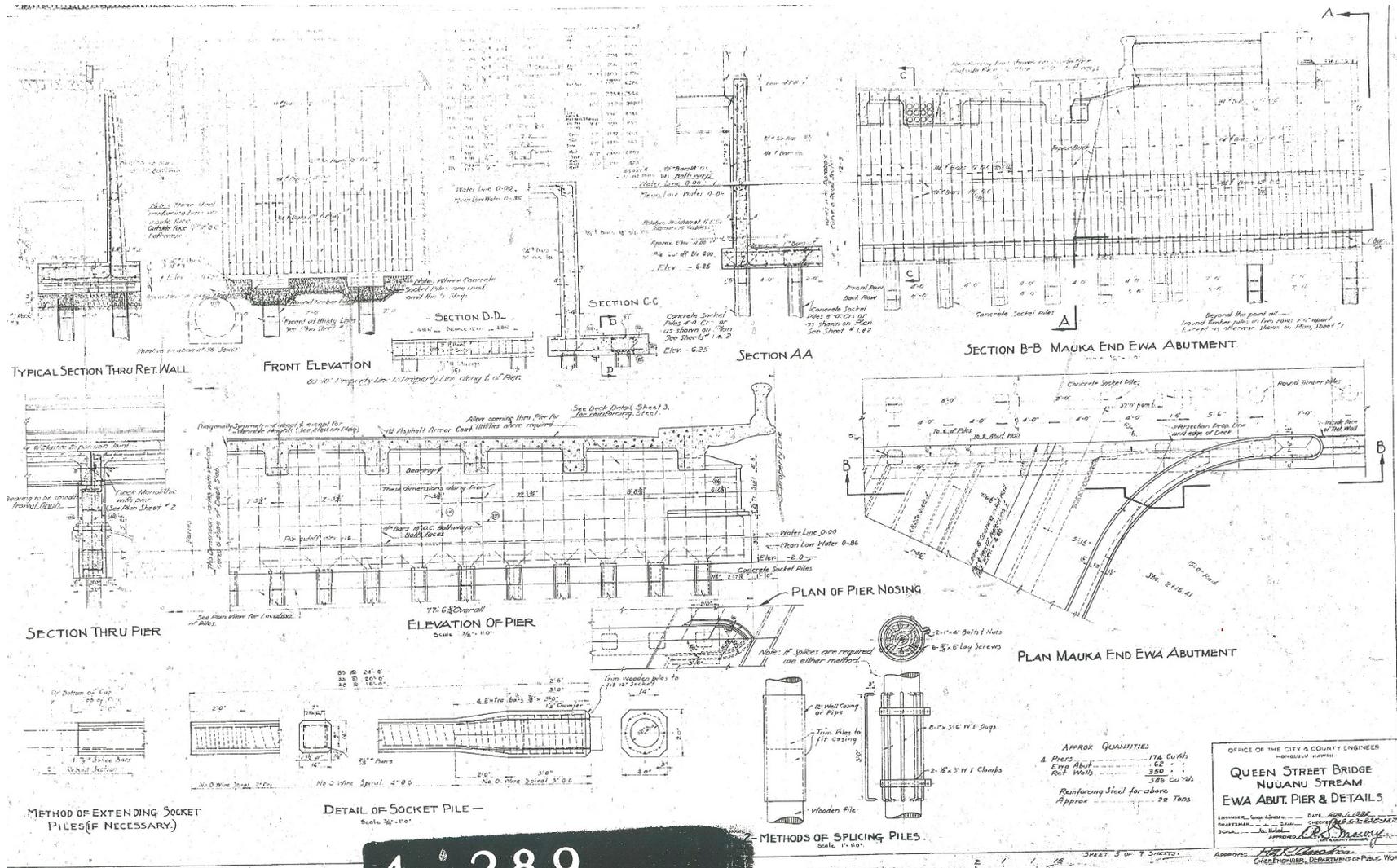


Field Notes: HAER HI-126, Queen Street Bridge. Figure 3: Original drawing prepared by the Office of the City & County Engineer, Honolulu, Hawaii titled, "Queen Street Bridge (Nuuanu Stream), Cross Section-Beams & Other Bridge Details." Dated August 1, 1932.

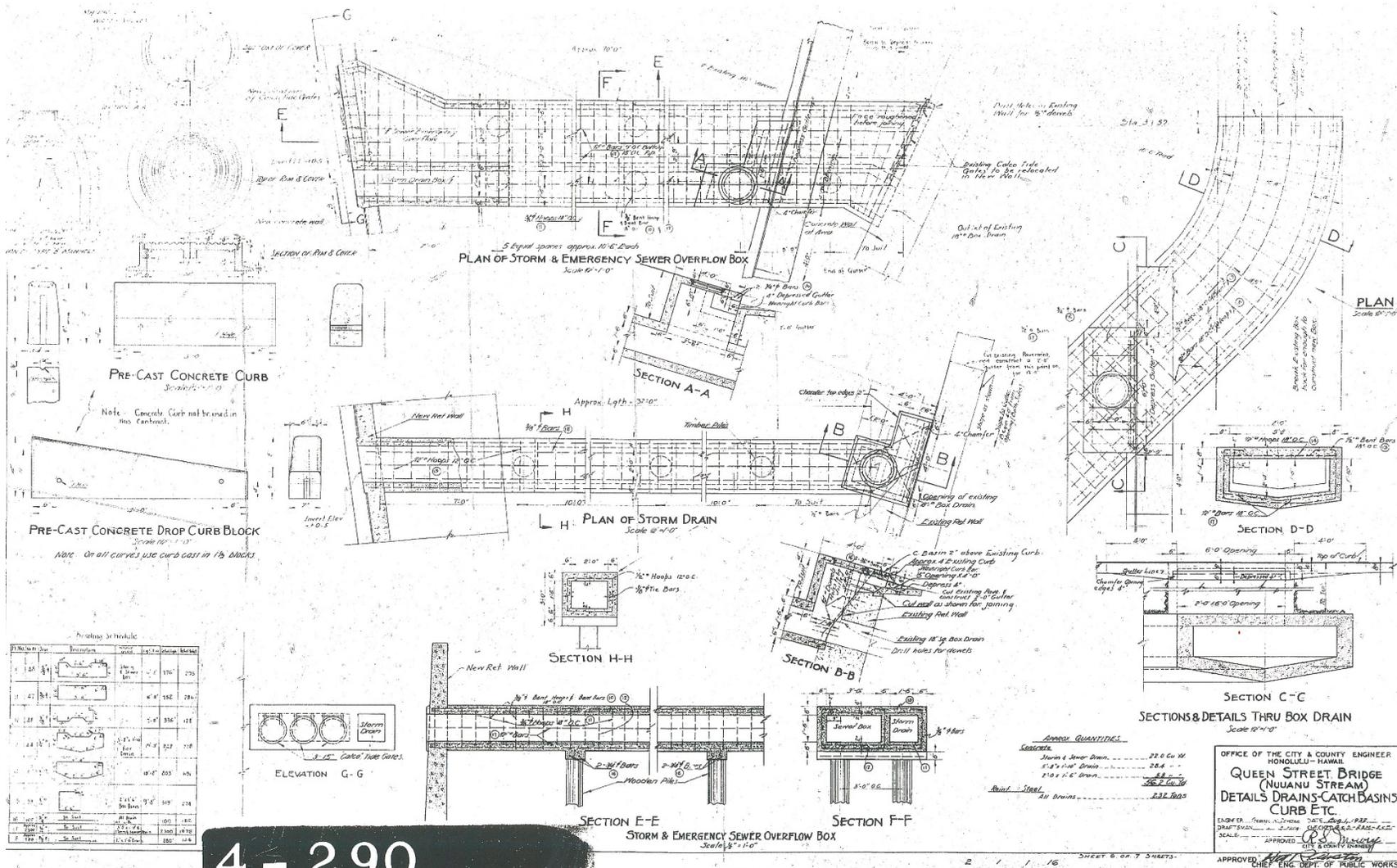


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Field Notes: HAER HI-126, Queen Street Bridge. Figure 4: Original drawing prepared by the Office of the City & County Engineer, Honolulu, Hawaii titled, "Queen Street Bridge (Nuuanu Stream), Details of Waikiki Abutment." Dated August 1, 1932.



Field Notes: HAER HI-126, Queen Street Bridge. Figure 5: Original drawing prepared by the Office of the City & County Engineer, Honolulu, Hawaii titled, "Queen Street Bridge, Nuuanu Stream, Ewa Abut. Pier & Details." Dated August 1, 1932.



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Field Notes: HAER HI-126, Queen Street Bridge. Figure 6: Original drawing prepared by the Office of the City & County Engineer, Honolulu, Hawaii titled, "Queen Street Bridge (Nuuanu Stream), Details Drains-Catch Basins Curb Etc." Dated August 1, 1932.

