

U.S. NAVAL BASE, PEARL HARBOR, PIER & QUAY WALLS
(U.S. Naval Base Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
Kuahua Peninsula
Pearl Harbor
Honolulu County
Hawaii

HAER HI-92
HAER HI-92

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD
PACIFIC WEST REGIONAL OFFICE
National Park Service
U.S. Department of the Interior
1111 Jackson Street, Suite 700
Oakland, CA 94607

HISTORIC AMERICAN ENGINEERING RECORD

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS (U.S. Naval Base, Pearl Harbor, Naval Supply Center) (Facilities Nos. K1, K3, K5, K6, K7/K8, K9)

HAER No. HI-92

- Location:** Pier and quay walls at north and west sides of Kuahua Peninsula
Pearl Harbor Naval Base
City and County of Honolulu, Hawaii
- UTM:** These facilities lie between the following four UTM coordinates:
04.609340.2362600; 04.609160.2362420; 04.609040.2362200;
04.609340.2362320
- Dates of Construction:** K1, west portion: 1914.
K1, east portion: Ca. 1940 (reconstruction 1948)
K3: Ca. 1940 (reconstruction 1948)
K5: Ca. 1942 (reconstruction 1948)
K6: Ca. 1943
K7/K8, K9: 1943
- Engineer/Builder:** Contractors Pacific Naval Air Bases
- Present Owner:** United States Navy
- Present Use:** Berthing Wharfs and Pier
- Significance:** The pier and quay walls at the Fleet Industrial Supply Center (FISC) on Kuahua Island are located within the Pearl Harbor Historic Landmark. These facilities are significant for their association with the buildup of facilities at Pearl Harbor prior to and during WWII. The west section of Facility K1 was built in 1914, in the early years of the base's development, but this portion was recently rebuilt. Facility K3 was built in 1940 in anticipation of increasing hostilities with Japan, and Facilities K5, K6, K7/K8, K9 and the eastern section of K1, were built in 1942 and 1943 following the Japanese attack. Together, these waterfront developments were critical in facilitating the Navy's supply operations, which reached all the ships and advance bases in the Pacific during the war.
- Project Information:** Photo documentation and recordation of this facility by the Navy has been done in anticipation of repairs to various structures. Work currently proposed for Facility K3 and K5 includes repair to the concrete piles, pier superstructure, bulkhead, sheetpile, and mooring hardware, and replacement of the timber fender system. The repair and replacement work proposed for Facility K8 is similar (but does not

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 2)

include bulkhead repairs), and in addition consists of increasing the available berthing length by adding 4 double bits and 2 bollards, and to provide Type II service mooring (64 knots). Oil containment floatation devices along piers K3, K5, K8 will also be installed.

Photo documentation of historic facilities by the Navy assists in expediting planned undertakings by having the documentation prepared prior to taking actions. Also, photo documentation assists the Navy in gaining more information about its historic facilities to assist in making proactive management decisions. This project is being supervised by Jeffrey Dodge A.I.A., Historic Architect at the Pacific Division, Naval Facilities Engineering Command, NAVFAC Hawaii. The photographic documentation was undertaken by David Franzen, photographer. George Casen, and Polly Cosson, Architectural Historians of Mason Architects, Inc. prepared the written documentation. The field work and research was conducted for this report between March and December 2005.

Description:

A series of five quays (also referred to in this report as 'wharves') and one pier are covered in this report; quay Facilities K1, K3, K5, K6, and K9, and pier Facility K7/K8. Wharfs K1 through K9 are built along the north and west coastline of the Kuahua Peninsula in Pearl Harbor. They are contiguous and in numerical order. Wharfs K1 to K6 and K9 run parallel to the shore, and wharfs K7/K8 are constructed as one extension out into the harbor between K6 and K9.

Wharf K1 is about 375' long, extending northeast from the western corner of Kuahua Peninsula. Wharfs K3 and K5 are together about 1060' in length and adjoin K1 at its northeast end, angling to the east northeast. The wharfs are built of reinforced concrete, with the top of the deck about 8'-10" above the mean low water line.

At its southern section, wharf K1 has a solid reinforced concrete wall at its outboard edge that extends down from the deck to below the water line. This section runs about 200'-0" from the southwestern end of the wharf and is a "sheet pile quay wall with tiebacks" (Lam, 1). There is a concrete curb at the top of this wall which is about 6" high and about 2'-0" wide. On the top of the curb are four large steel cleats spaced regularly along its length. The deck of the wharf, inboard of the curb, is concrete paving. At the north end of this 200' section of wharf K1, the construction of the wharf's outboard edge changes to become open underneath the deck, revealing the reinforced concrete piles which are driven into the harbor bottom. At this point the outboard edge of the wharf turns perpendicular to the shore, making a right angle turn out into the harbor for a distance of about 35'-0" before turning 90° again to parallel the shore for about 175'-0" as it extends to the northeast. At this point the similarly constructed wharfs K3 and K5 begin, running east northeast for their total length.

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 3)

The northern section of wharf K1 and the entirety of wharfs K3 and K5 rest on 1'-4" square reinforced concrete piles that are driven into the harbor bottom. These piles are set into transverse rows of seven, which divide the length of wharfs into bays; 14 bays for the northern section of K1 and 89 bays for wharfs K3 and K5. Most of these bays are 12'-0" wide, except for the two at the south end of wharf K1 (bays 1 and 2) which are 10'-6" wide, and the first bay at K3 (south end) which is 9'-7" wide. At the inboard edge of the wharfs, the seventh pile in each of the transverse rows is a batter (brace) pile. This pile was placed next to the sixth pile and driven at an inward angle of about 23° toward the center of the wharf. Each row of piles is capped by a reinforced concrete beam about 3'-4" high and 2'-8" wide which spans the piles. These beams are about 43'-0" long, the width of the wharf. On top of this beam is the reinforced concrete deck of the wharf which is about 10" thick. At the outboard side of the wharfs, a second concrete beam about 1'-3" high and 2'-6" wide spans the distance between the pile caps about 1'-0" below the bottom of the wharf deck. This beam is pierced horizontally with six holes at each bay which are the former mounting locations for a timber fender. Drawings show that a similar beam is also located on the inboard side of the wharf (Naval Facilities Engineering Command, dwg. 448958). At the outboard edge of the wharf deck is a concrete curb about 10" high and 1'-0" wide that has 1" chamfered corners. This curb has large double steel bitts set on its top at about every tenth bay. At each fifth bay between the bitts are large steel cleats. To give extra strength to these mooring points, the curb at these bays is widened to about 2'-5" at the cleats and about 3'-0" at the bitts. At the bays with the bitts, the reinforced concrete wharf deck under the widened curb is increased to about 1'-5" thickness. At the south end of wharf K1, bay one has a recessed area at its outboard edge which has no curb or deck. This recessed area extends about 2'-6" inboard from the edge of the wharf and allows access to the beam which spans the outboard edge of the bay at 1'-0" below the bottom of the wharf deck.

Wharf K6 runs north-south, and is located at the east end of wharf K5. It is about 393'-9" long and 43' wide, of reinforced concrete construction, with a concrete deck on piles and pile caps, and a sheet pile wall at its inboard edge. Unlike the adjacent wharfs to the southwest (K1, K3, and K5) this wharf (and the others to the north; K7/K8 and K9) was originally constructed with a concrete deck and as a result it does not have the second concrete beam below the wharf deck which is present on the previous wharfs. The central section of the deck of wharf K6 is constructed at an elevation of about 4'-0" above the mean low water level, about 4'-10" lower than the decks of the adjoining wharfs K5 and K7. There are also short sections of wharf K6 at each end of the lowered section which are constructed at the elevation of the adjoining wharfs. This lowered section, about 228'-9" in length, is accessed by two ramps, one from each end of the

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 4)

wharf, which are each about 48'-0" long and set at about a 10% slope. The ramp at the south end of the lowered section is the full width of the wharf (43') while the north ramp is only about 15'-0" wide and is located at the inboard side of the wharf. There is no curb at the outboard edge of the lowered section. The ramps and elevated sections of wharf K6 have 10" high curbs. Timber piles and a wood fender run along the outboard edge of wharf K6. The piles are about 12" in diameter, driven into the harbor bottom at intervals of about 6'-0". Large timbers form the fender, bolted between and behind the piles. Sections of the piles and fenders are missing from the south end of the wharf.

Wharfs K7 and K8 project out into the harbor in a southwest direction from the north end of wharf K6. K7 is the designation for the south-facing side of this projecting wharf and K8 is the designation for the north-facing side. K7/K8 is about 150' wide and about 635' long on its centerline. As it does not project into the harbor perpendicularly from the adjoining wharfs K6 and K9, the length of wharf K7 is about 600' and the length of K8 is about 667'. There is a large transit shed, Building 473, which covers most of its deck. The deck elevation is the same as the other wharfs to the south (8'-10" above mean low water line), and it has similar construction, reinforced concrete piles, pile caps, and deck as the adjacent wharf K6.

Wharf K7/K8 is built on 1'-6" x 1'-6" reinforced concrete piles. These are set into transverse rows, typically spaced 10'-0" apart, which have 31 piles in each row. There are paired piles at the third pile in from each of the two outboard edges of the wharfs. Here a batter (brace) pile for extra support is sistered to the vertical pile. These batter piles are angled inward at a 4:12 slope toward the center of the wharf. Transverse reinforced concrete beams 2'-2" high cap the piles and support a 10" thick reinforced concrete deck. At its outboard edges, wharf K7/K8 has a concrete curb about 1'-6" wide and 10" high with a 1" chamfered edge. This curb is widened to about 3'-0" at the points where large steel cleats and double bitts for mooring ships are attached to its top surface, typically about every 60'. At several locations along both wharfs this curb is set inboard about 1' and the deck relieved about the same distance to provide access to piping and valves below the deck.

Centered about 7'-6" from the outboard edges of both wharfs are pairs of concrete-infilled slots in the deck slab that formerly contained train tracks. Each of the slots which formerly held track are 1'-0" wide with a 2'-0" expanse of wharf deck between them. These tracks did not form a loop along the wharfs; rather each set of tracks ran out to the end of each wharf where they terminated.

Wharf K7/K8 also has timber piles and fender which protect most of its outboard edges. This consists of approximate 12" diameter wood

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 5)

piles, spaced every 6' which are driven into the harbor bottom. Between the piles are lengths of 8" x 12" timbers and behind the piles is a continuous band of 12" x 12" timbers, all bolted to the concrete wharf. Some piles and areas of fender are broken or missing.

Wharf K9 is a continuation of the northward line of wharf K6 and extends north about 365'-0" from the base of wharf K7/K8. It is constructed similarly to wharf K6, with reinforced concrete piles, beams, and deck, and a sheet piling wall at its inboard edge. Wharf K9 also has a lowered center section of the deck which is 204' in length and is at an elevation of 4'-0" above the mean low water line. This lowered section is accessed by two 10% grade ramps, one at either end, which are each 48' long and span the width of the wharf, 43'-0" from the inboard sheet piling wall to the outboard edge. There is no curb at the outboard edge of the lowered section. The ramps and short sections of level deck at the top of the ramps have concrete curbs 10" high by 12" wide. The pile and fender system is the same construction as wharfs K7/K8.

Historical Context

Kuahua Island was part of the initial acquisition of Pearl Harbor by the U.S. Navy in 1902. Between 1912 and 1914, as the initial phase of development of the Naval Ammunition Depot (NAD) at Pearl Harbor, magazine storage and handling buildings, officer's houses, barracks, and civilian quarters were constructed there. It was in this period that the original wharf (K1, demolished) was built, to be used in conjunction with a shipping house (Facility 411, demolished) for the handling of ordnance supplies. By 1923, the island's facilities were increased with an additional seventeen ammunition storage and handling buildings. The depot continued to be expanded, and by 1930 eight additional ammunition storage buildings were built. When it became apparent that the ammunition depot's central location within the Pearl Harbor base was potentially dangerous and its boundaries did not allow for adequate expansion, the Navy sought a new ammunition depot location. By 1934 the facility was moved to Lualualei Valley and an additional facility at West Loch.

The original K1 wharf (south section) was initially constructed in 1914 by laborers at the Pearl Harbor naval station. Listed as completed as of September 15, 1914, this was 200' long and about 43' wide and built of reinforced concrete piles and deck slab.¹ This original, 1914 section of K1 wharf was apparently removed ca. 1993 when the present quay wall with tiebacks was constructed² in its place at the southwest end of the wharf. When the original 1914 wharf was

¹ National Archives and Records Administration (NARA), 71CR, Box 3, Vol. 5.

² Lam, Helen, Historic American Engineering Record, Pearl Harbor Berthing Wharf K1, Kuahua Peninsula, HAER HI-20, September, 1992.

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 6)

constructed, the piles were driven down "till refusal."³ This left about seven feet of reinforced pile above the level required for the wharf deck, which was removed by using one stick of 60% dynamite that was placed into a hole in each pile and detonated. This shattered the concrete at the necessary level and left the reinforcing steel "undamaged" so that it could be bent into position and "incorporated into the beams of the wharf."⁴ This 1914 section of wharf was originally used for handling the ordnance of the magazine located on Kuahua Island, and appears to have been the primary wharfage on the island until at least 1938.⁵

Contractors Pacific Naval Air Bases (CPNAB), a consortium of private local and mainland firms, was responsible for the war-era wharf construction.

The section of the present north end of wharf K1 that is approximately 175', and set on reinforced concrete piles along with the 1060' length of wharf K3 and K5, was constructed in 1941. These were among the series of wharfs and quay walls set up to confine spoil from the dredging of Pearl Harbor that was used to add sixty-nine acres to Kuahua and attach it to mainland Oahu, forming a peninsula.⁶ Kuahua might have also received excavated material from the Red Hill underground fuel tank project.⁷

The Kuahua peninsula became the core of the Naval Supply Depot (NSD) by 1943 (the NSD's establishment was approved by the Secretary of the Navy as early as mid-1941). Wharfs, piers and storehouses were built to accommodate the arrival of supplies for the war effort, since the former ammunition depot's one small quay (Fac. K1) was not adequate to supply all the ships and advance bases in the Pacific during WWII. Dredging and filling operations permanently changed the configuration of the shoreline, making it a more regular and geometric shape.⁸

Wharf K1 was planned and built over the waters of Pearl Harbor, near a sharp drop off where the harbor bottom falls away from a depth of several feet to over forty feet. The line of the adjacent K3 and K5 wharfs continued over a portion of this drop off line. The wharfs ran

³ NARA, 71CR, Box 3, Vol. 5.

⁴ Ibid.

⁵ NARA, 71CR, Box 3, Vol. 5, and RG71 CA box 155, G-3, "aerial views," photo 148, and NAVFAC PAC Plan Files dwg M-N15-102.

⁶ U.S. Navy Bureau of Yards and Docks, *Building the Navy's Bases in World War II, History of the Bureau of Yards and Docks and the Civil Engineering Corps 1940-1946 Volume II*, (Washington D.C.: United States Government Printing Office, 1947) 131-132.

⁷ Landauer, Lyndall and Donald Landauer, *Pearl, The History of the United States Navy in Pearl Harbor*, (Lake Tahoe, CA: Flying Cloud Press, 1999), 259.

⁸ Helber Hastert & Fee Planners, Inc., *Pearl Harbor Naval Complex Integrated Cultural Resources Management Plan*, 2002, 3-180.

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 7)

about 150' from the 1938 shoreline.⁹ The area behind these wharfs was filled.

The location of test piles and soundings for K1, K3, and K5 wharfs were done in late 1938 and in 1939.¹⁰ Original drawings for K1, K3, and K5 wharfs are dated September and October, 1940.¹¹ The wharfs and the adjacent storehouse, Building 447, were completed by June 30, 1941 as shown on a 14th Naval District map that shows conditions at Pearl Harbor as of that date.¹²

Wharfs K1, K3, and K5 were originally built with their current concrete piles, which had transverse pile caps of concrete which supported wood beams (8" x 16" stringers) and a wood deck of 4" decking.¹³ The wharfs also had a wood fender system that included wood piles driven at a very slight outward angle. The wood of the wharfs was specified to be all Douglas fir, with the 4" decking to be non-treated and all other timber creosoted with 12 pounds per cubic foot of timber.¹⁴ The steep slope of the harbor bottom under the wharfs is shown as covered with riprap.¹⁵ The inboard edge of the wharfs is shown with a 10" thick concrete wall, 8'10" high, which extends down from the deck of the wharfs to the mean low water level.¹⁶

Shortly after their construction, the wharfs K1 through K9 were referred to by their phonetic alphabet designation of "King." The phonetic alphabet is a list of words that are used to identify letters in a message transmitted by radio. During the years of World War II and up until 1957 the U.S. Navy used the word "King" for the spelling of the letter "K." The designation "King Docks" appears on an architectural plan from 1949 and was widely accepted for everyday use; as occurrences at the wharfs were reported in Honolulu newspapers as at the "King Docks."¹⁷ The K wharfs only came to be known as the "Kilo" wharfs after the U.S. Navy switched to the current NATO phonetic alphabet in 1957.¹⁸

In 1947 wharfs K1, K3, and K5 were reconstructed with several changes and additions. This followed an oil fire on February 27 of that year which damaged a portion of wharf K3.¹⁹ The wood portions

⁹ NAVFAC PAC Plan Files dwg M-N15-102 and 448994.

¹⁰ Ibid.

¹¹ NAVFAC PAC Plan Files dwg 5932, 5933, 5934, 5935, and 5938

¹² NARA II, RG 71 file # 1400-3-106.

¹³ NAVFAC PAC Plan Files dwg 448964, and 5933.

¹⁴ NAVFAC PAC Plan Files dwg 5593.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ *Honolulu Star-Bulletin*, "King Docks Oil Blaze Reported" February 27, 1947, p.1, c.4, and NAVFAC PAC Plan Files dwg M-N15-197, March 14, 1949.

¹⁸ Naval Historical Center, "Phonetic Alphabet and Signal Flags." Webpage accessed on December 20, 2005.

¹⁹ *Honolulu Star-Bulletin*, "King Docks," and NAVFAC PAC Plan Files dwg 448959.

of the deck were removed and a new concrete deck was built. For this, new reinforced concrete beams, which supported the new 10" thick concrete deck, were cast over the tops of the existing concrete pile caps. This 1947 concrete work can be clearly seen at the outboard side of the wharf where the added beams, slab, and curb are evident; cast on top of the older, 1941 pile caps and outboard beam. The new deck was at the same elevation as the previous wood deck, 8'-10" above the mean low water line.²⁰ New reinforced concrete firewalls were also constructed at this time at: wharf K1 – bay 12, wharf K3 – bay 25, and wharf K5 – bay 50. They were placed vertically at the underside of the deck, extending down 9'-10" to reach below the mean low water level.²¹

Also part of the 1947 reconstruction was the addition of a concrete sheet pile retaining wall that was driven into the earth at the inboard edge of the 1941 section of wharf K1. This sheet pile was also installed at the inboard edges of wharfs K3, K5, K6, K9, K10, and K11. It was built of reinforced concrete piles of varying lengths that have a tongue and groove profile. Drawings indicate that these piles were approximately thirty-plus feet long and were to be driven in to a level 2'-0" below the deck of the wharf. The piles were 15" thick and had an overall width of 21" which included 18" for the main width of the pile and the 3" protrusion of the tongue along one side.²² The timber fender piles and chocks of wharfs K1, K3, and K5 were also replaced in the 1947 reconstruction.²³

At wharf K3, an area of concrete piles, pile caps, and beams at bays 30 through 45 was refinished as part of the 1947 reconstruction. This presumably was the area which was damaged by the February oil fire. In this area, 79 piles were specified to be "sandblasted free of softened and loosened concrete and oil and encased in cast-in-place jacket" of "Ready-mix conc."²⁴ Also in this area; 15 transverse pile caps/beams, the outboard longitudinal beam, and a small portion of the inboard longitudinal beam had their sides and bottoms "cleaned and sand blasted free from all loosened and softened concrete" and were "gunited."²⁵

Wharfs K6, K7/K8, and K9 were built in the second half of 1942 or in the first half of 1943. The wharfs, and the associated transit shed at K7/K8, are shown as "Authorized Construction (not started)" on a map of the Pearl Harbor Navy Yard that shows conditions as of June 30,

²⁰ NAVFAC PAC Plan Files dwg 448958.

²¹ NAVFAC PAC Plan Files dwg 448961, 448962.

²² NAVFAC PAC Plan Files dwg 448992, 448993.

²³ NAVFAC PAC Plan Files dwg 448958.

²⁴ NAVFAC PAC Plan Files dwg 448959.

²⁵ Ibid.

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 9)

1942.²⁶ One year later, June 30, 1943, all the structures are shown as "Existing buildings."²⁷ Original drawings for these wharfs are dated January 1942.²⁸

Contractors Pacific Naval Air Bases reported problems at the north end of wharf K9 where it intersects wharf K10. These problems were encountered during construction of the sheet piling walls:

The area at the junction of the west and north Kuahua quays [K9 and K10] (Projects Nos. 533 and 1000) was very soft. After backfill was placed it was observed that the under side of the deck, at the concrete pile caps, was in bad condition. The pile caps had a very definite, concave line of cleavage directly over the pile tops; every pile in the bent was affected. Two haunches at the inboard and supporting batter piles were badly cracked and spalled. It was decided to do nothing at the moment, and to watch for further movement. The cracks did become larger: repairs were made in October 1943.²⁹

Kuahua Peninsula was not targeted by the Japanese on December 7, 1941, so the completed and under-construction waterfront facilities in place by that time were not damaged. CPNAB did not report any delays in construction following the attack.

The Naval Supply Depot was downsized to a Naval Supply Center (NSC) immediately following the war, and was re-designated as the Fleet Industrial Supply Center (FISC) in the 1990s. Since the war, many outlying storage areas have been disposed of by the Navy, and supply functions have generally been concentrated at Kuahua Peninsula.³⁰ As such, waterfront Facilities K1, K3, K5, K7/K8, and K9 continue to function in a similar fashion as they did during the war; for loading and unloading barges, submarines, and ships.

²⁶ NARA, micro film roll R-1042, frame F8, map I-N1-148.

²⁷ NARA, RG 71 file 1400-3-124, map I-N1-167.

²⁸ NAVFAC PAC Plan Files dwg 1423.

²⁹ Contractors Pacific Naval Air Bases. *Technical Report and Project History, Contracts NOy-3550 and NOy-4173*, Chapter XXIX – Navy Yard, Pearl Harbor, n.d., A-718.

³⁰ Helber Hastert & Fee Planners, Inc., *Pearl Harbor*, 3-184, 3-185.

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 10)

Sources:

Bureau of Yards and Docks. Building the Navy's Bases in World War II, History of the Bureau of Yards and Docks and the Civil Engineer Corps 1940-1946, Volume II. Washington, D.C., U.S. Government Printing Office. 1947.

Contractors Pacific Naval Air Bases. *Technical Report and Project History, Contracts NOy-3550 and NOy-4173*, Chapter XXIX – Navy Yard, Pearl Harbor, n.d. Microfilm of report at Pacific Division Naval Facilities Engineering Command Library.

Environment Hawai'i. "In Memory of Hawaii: The Losses Gone Unsung." V.2, no. 6 (December 1991). accessed on May 20, 2005 at <http://www.environment-hawaii.org/1291cov.htm>

Hawaii Navy News Online. "Submarine Centennial: Navy Celebrates 100 Years of the Submarine." accessed on May 20, 2005 at <http://www.hnn.navy.mil/Archives/000414/cmdrcol.htm>

Helber Hastert & Fee Planners, Inc. *Pearl Harbor Naval Complex Integrated Cultural Resources Management Plan*, 2002. Prepared under Contract with Pacific Division, Naval Facilities Engineering Command for Commander, Navy Region Hawaii.

Honolulu Advertiser. "Pearl Harbor Plus 60 Years, Chapter II, Early Reports From Those Who Were There," accessed on May 20, 2005 at: <http://www.honoluluadvertiser.com/specials/pearlharbor60/chapter2.html>

Honolulu Star-Bulletin. "King Docks Oil Blaze Reported". February 27, 1947, p.1, c.4.

Lam, Helen. Historic American Engineering Record, Pearl Harbor Berthing Wharf K1, Kuahua Peninsula, HAER HI-20. Pearl Harbor, HI. September, 1992.

Landauer, Lyndall and Donald Landauer. *Pearl, The History of the United States Navy in Pearl Harbor*. Lake Tahoe, CA: Flying Cloud Press. 1999.

NARA, National Archives and Records Administration. Written documentation and photos in RG 71 CA. College Park, Maryland. Various dates.

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 11)

Naval Historical Center. "Commander Submarine Squadron Four: Report for Pearl Harbor Attack accessed May 19, 2005 at <http://www.history.navy.mil/docs/wwii/pearl/ph8.htm>

_____ "Phonetic Alphabet and Signal Flags." Webpage www.history.navy.mil/faqs/faq101 accessed on December 20, 2005.

NAVFAC PAC Plan Files. Original drawings for Facilities K1-K9 on microfilm, various dates.

Navy News Stand. "A 1958 History of Pearl Harbor and Our Shipyard." 11/13/2003 accessed on May 19, 2005 at http://www.news.navy.mil/search/displaybbs.asp?bbs_id=732&cat=1

Roscoe, Theodore. *U.S. Submarine Operations in World War Two*. U. S. Naval Institute, Annapolis, Maryland. Accessed on May 19, 2005 at <http://www.subvetpaul.com/MemEast.htm>

U.S. Navy. Reinforced Concrete Wharf, U.S. Naval Magazine, Kuahua Island, Hawaii, n.d. Memo reproduced at the National Archives, Record Group 71CR, Box 3 of 3, Vol. 5.

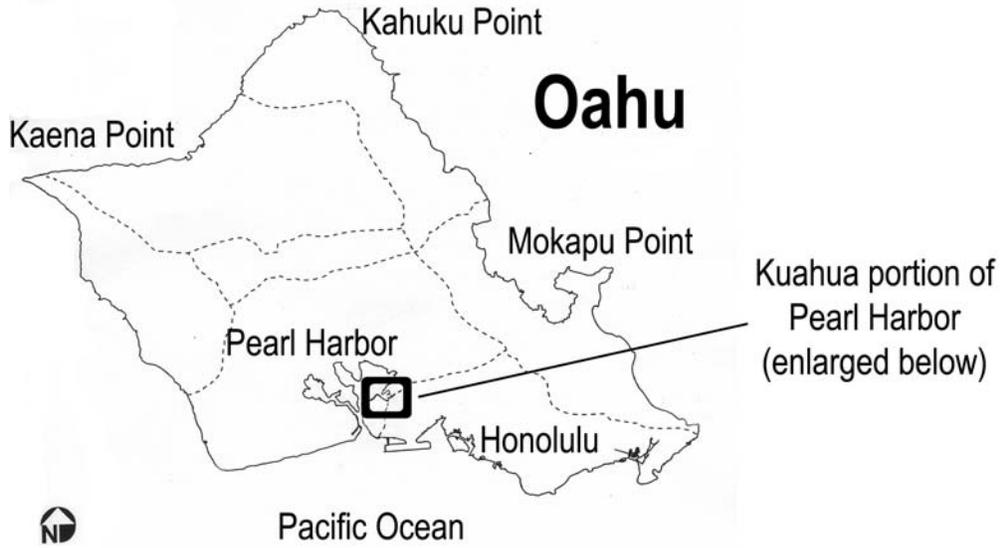
U.S. Navy Bureau of Yards and Docks. *Building the Navy's Bases in World War II, History of the Bureau of Yards and Docks and the Civil Engineering Corps 1940-1946 Volume II*. United States Government Printing Office: Washington, 1947.

U. S. Navy, Fleet Industrial Supply Center. FISC Pearl Harbor Facility Inventory

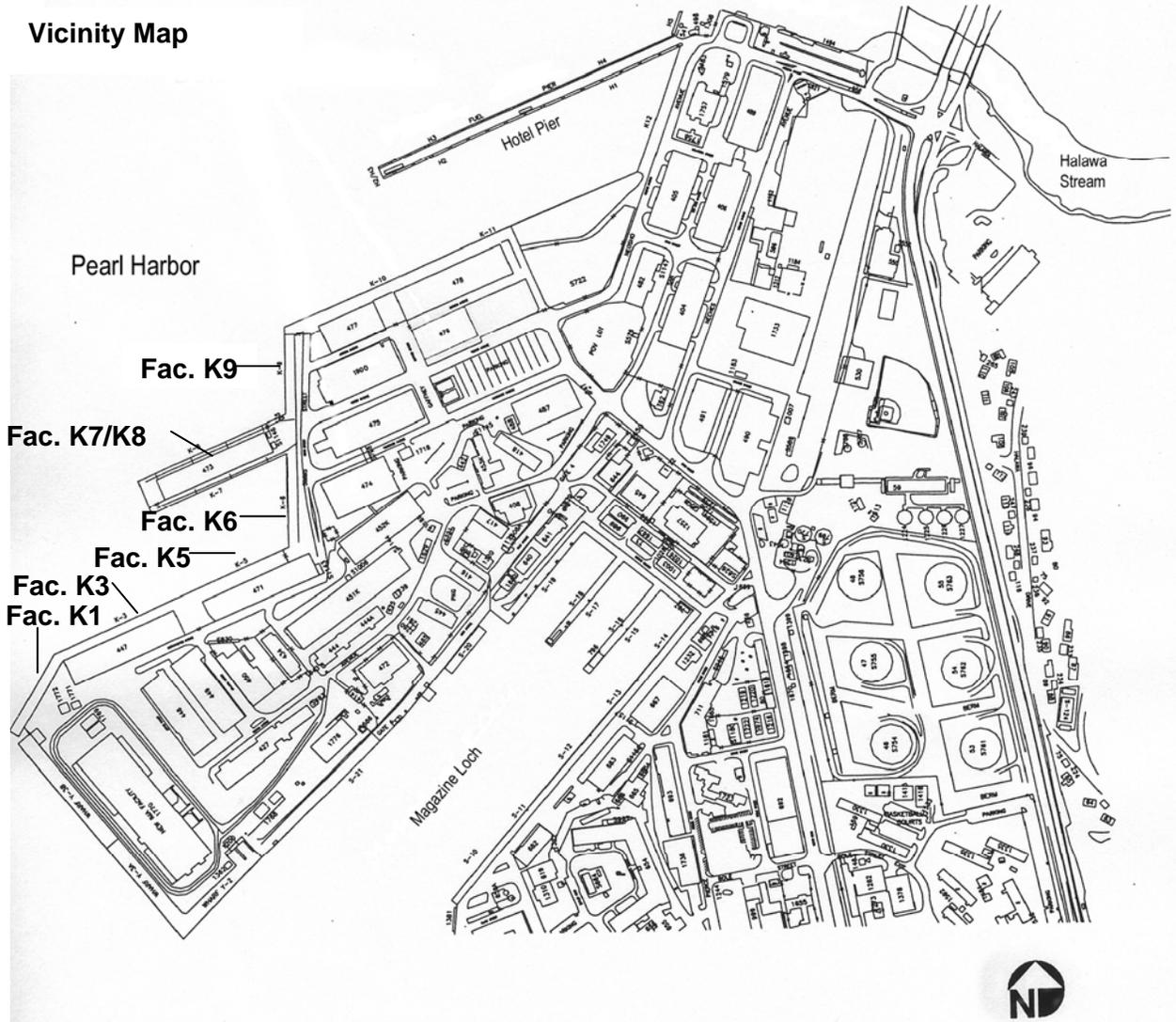
World War II PT Boats Museum and Archives, Report Section 1-2, accessed on May 19, 2005 at <http://www.ptboats.org/20-07-05-reports-002.html>

Young, Frank Pierce. "Pearl Harbor History: Building the Way to a Date of Infamy." Department of the Navy accessed on May 20, 2005 at: http://www.microworks.net/pacific/bases/pearl_1919-1941.htm

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 12)

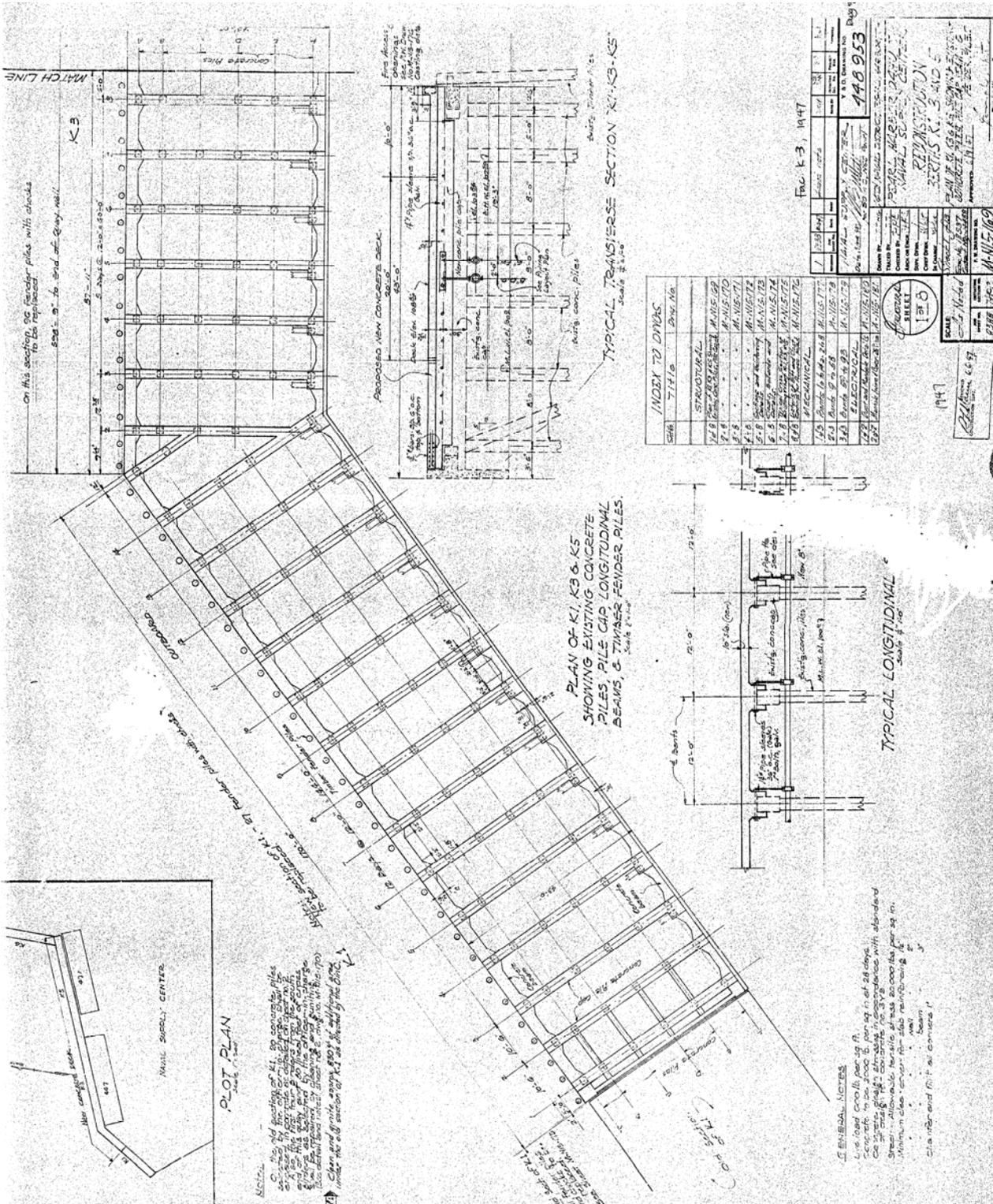


Vicinity Map



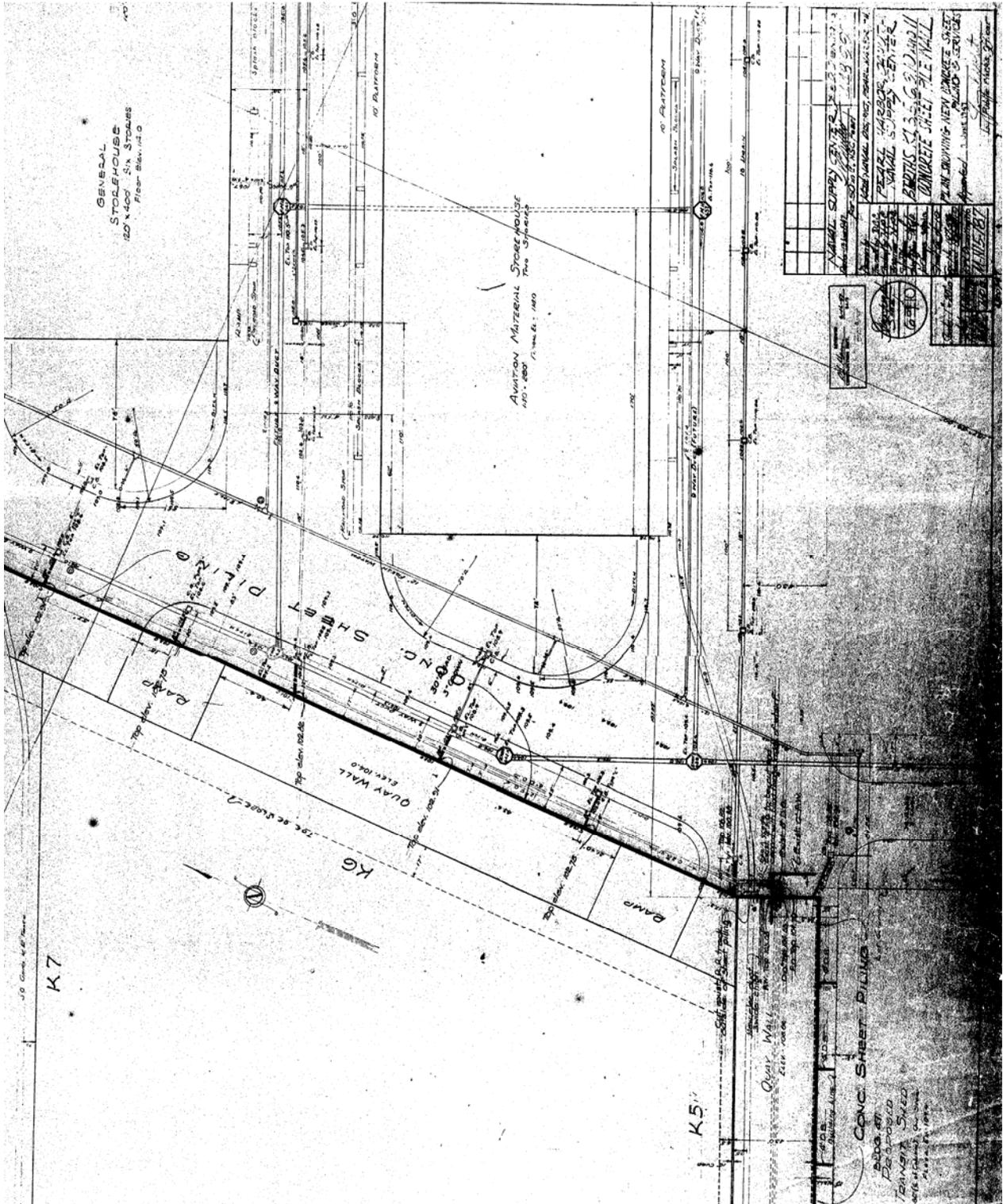
U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
 (U.S. Naval Base, Pearl Harbor, Naval Supply Center)
 (Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
 HAER No. HI-92 (Page 13)

**Plan of K1, K3, & K5 Showing Existing Concrete Piles, Pile Cap, Beams and Fender Piles
 (Drawing No. 448953, dated June 9, 1947) (reduced, not to scale)**



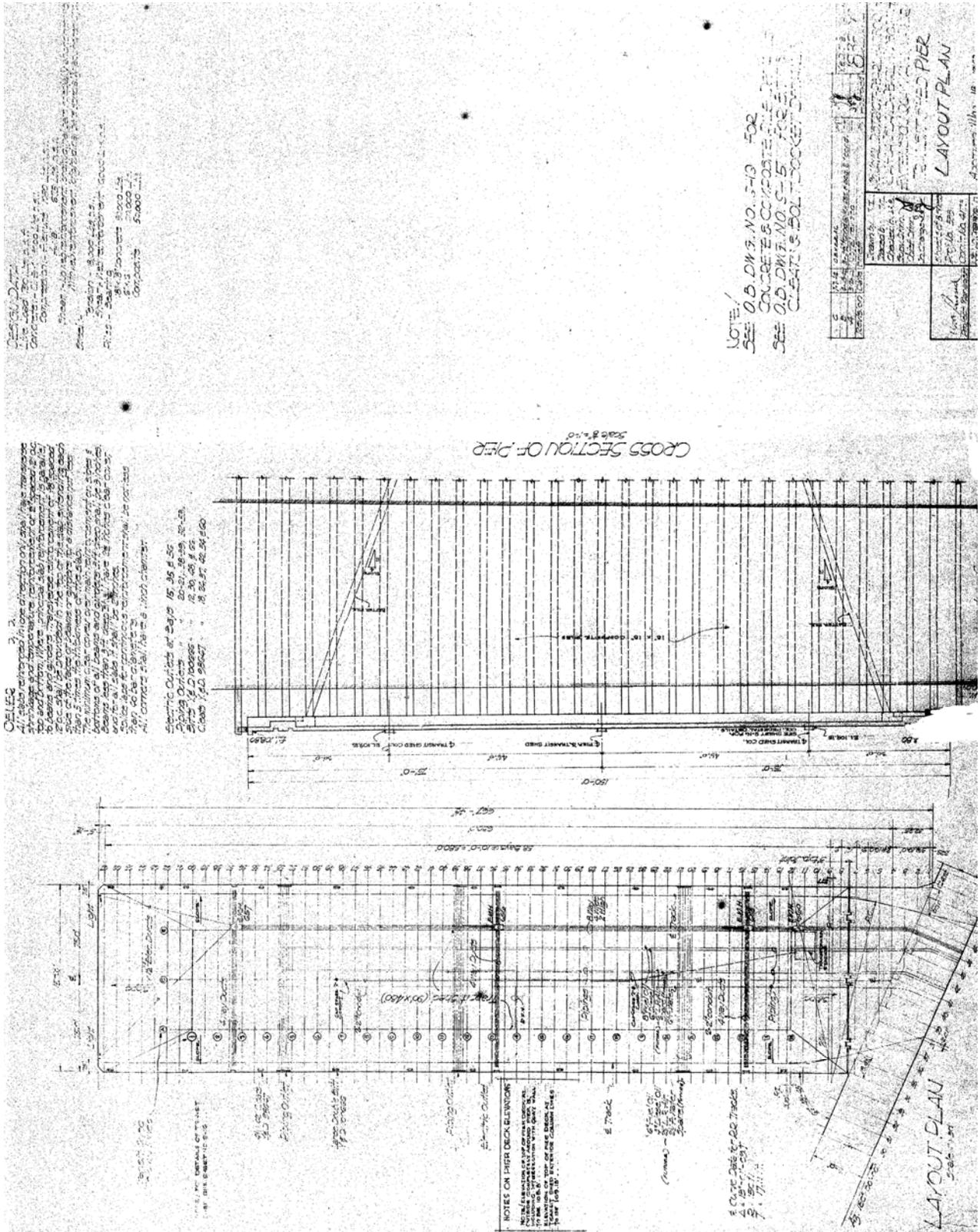
U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 20)

Facility K6 Plan Showing New Concrete Sheet Piling and Services
(Drawing No.V-N15-187, dated June 7, 1947)(reduced, not to scale)



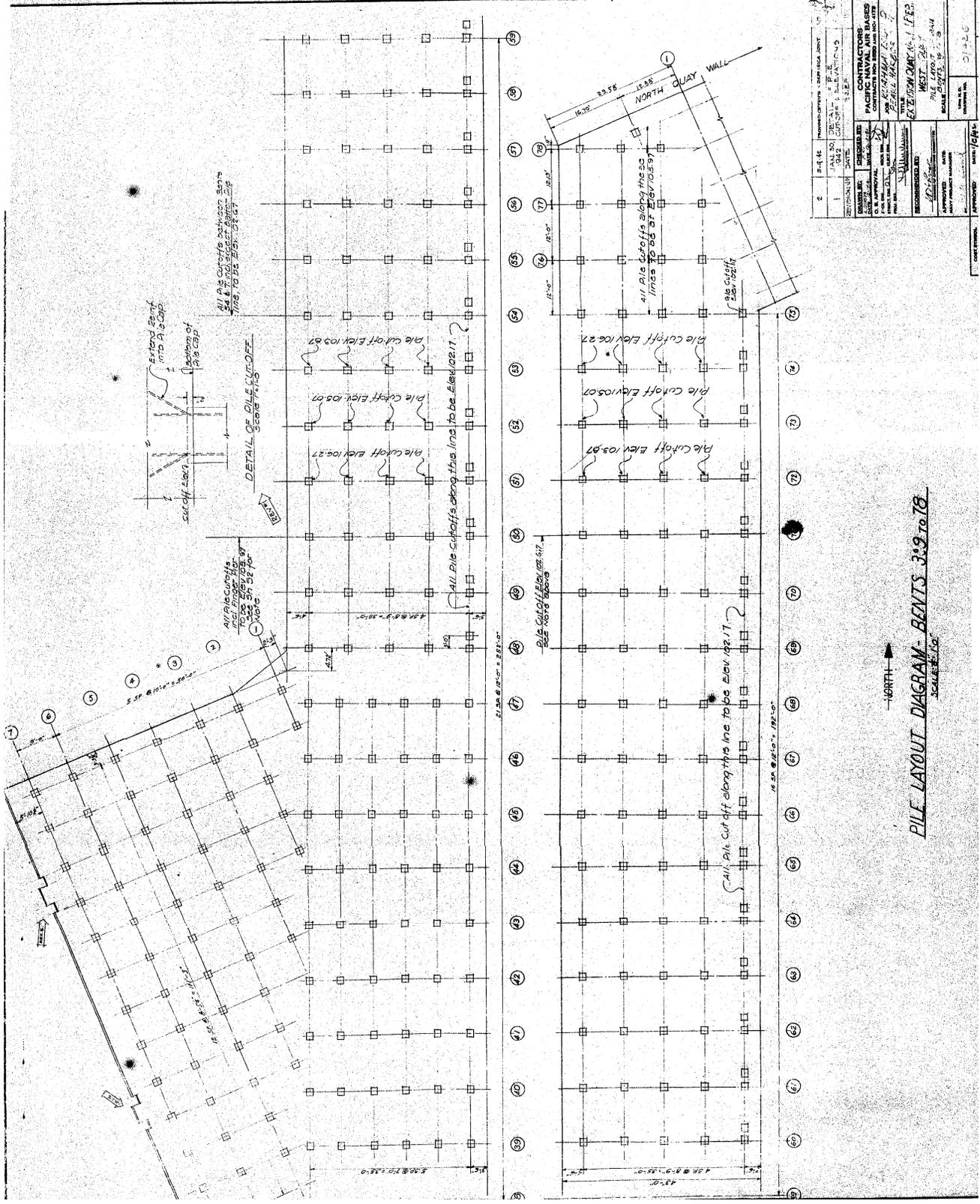
U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
 (U.S. Naval Base, Pearl Harbor, Naval Supply Center)
 (Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
 HAER No. HI-92 (Page 21)

Facility K7/K8 Transit Shed Pier Layout Plan
 (Drawing No. 183300, dated July 7, 1942) (reduced, not to scale)



U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
 (U.S. Naval Base, Pearl Harbor, Naval Supply Center)
 (Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
 HAER No. HI-92 (Page 25)

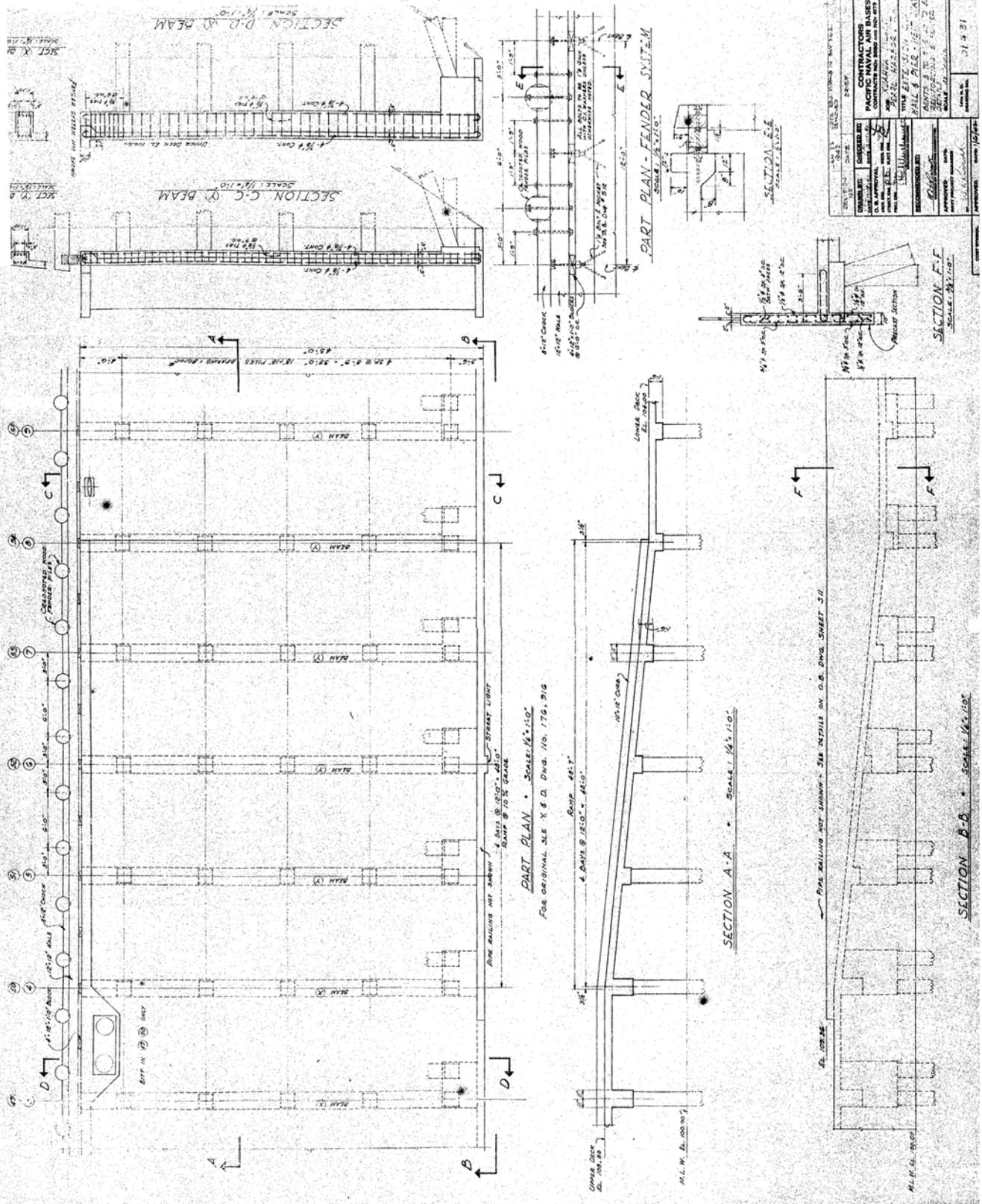
Facility K9 Pile Layout Diagram
 (Drawing No. 01426, dated May 9, 1942) (reduced, not to scale)



NO.	DATE	DESCRIPTION
1	5-9-42	ISSUED FOR CONSTRUCTION
2	5-15-42	REVISIONS
3	5-22-42	REVISIONS
4	5-29-42	REVISIONS
5	6-5-42	REVISIONS
6	6-12-42	REVISIONS
7	6-19-42	REVISIONS
8	6-26-42	REVISIONS
9	7-3-42	REVISIONS
10	7-10-42	REVISIONS
11	7-17-42	REVISIONS
12	7-24-42	REVISIONS
13	7-31-42	REVISIONS
14	8-7-42	REVISIONS
15	8-14-42	REVISIONS
16	8-21-42	REVISIONS
17	8-28-42	REVISIONS
18	9-4-42	REVISIONS
19	9-11-42	REVISIONS
20	9-18-42	REVISIONS
21	9-25-42	REVISIONS
22	10-2-42	REVISIONS
23	10-9-42	REVISIONS
24	10-16-42	REVISIONS
25	10-23-42	REVISIONS
26	10-30-42	REVISIONS
27	11-6-42	REVISIONS
28	11-13-42	REVISIONS
29	11-20-42	REVISIONS
30	11-27-42	REVISIONS
31	12-4-42	REVISIONS
32	12-11-42	REVISIONS
33	12-18-42	REVISIONS
34	12-25-42	REVISIONS
35	1-1-43	REVISIONS
36	1-8-43	REVISIONS
37	1-15-43	REVISIONS
38	1-22-43	REVISIONS
39	1-29-43	REVISIONS
40	2-5-43	REVISIONS
41	2-12-43	REVISIONS
42	2-19-43	REVISIONS
43	2-26-43	REVISIONS
44	3-5-43	REVISIONS
45	3-12-43	REVISIONS
46	3-19-43	REVISIONS
47	3-26-43	REVISIONS
48	4-2-43	REVISIONS
49	4-9-43	REVISIONS
50	4-16-43	REVISIONS
51	4-23-43	REVISIONS
52	4-30-43	REVISIONS
53	5-7-43	REVISIONS
54	5-14-43	REVISIONS
55	5-21-43	REVISIONS
56	5-28-43	REVISIONS
57	6-4-43	REVISIONS
58	6-11-43	REVISIONS
59	6-18-43	REVISIONS
60	6-25-43	REVISIONS
61	7-2-43	REVISIONS
62	7-9-43	REVISIONS
63	7-16-43	REVISIONS
64	7-23-43	REVISIONS
65	7-30-43	REVISIONS
66	8-6-43	REVISIONS
67	8-13-43	REVISIONS
68	8-20-43	REVISIONS
69	8-27-43	REVISIONS
70	9-3-43	REVISIONS
71	9-10-43	REVISIONS
72	9-17-43	REVISIONS
73	9-24-43	REVISIONS
74	10-1-43	REVISIONS
75	10-8-43	REVISIONS
76	10-15-43	REVISIONS
77	10-22-43	REVISIONS
78	10-29-43	REVISIONS
79	11-5-43	REVISIONS
80	11-12-43	REVISIONS
81	11-19-43	REVISIONS
82	11-26-43	REVISIONS
83	12-3-43	REVISIONS
84	12-10-43	REVISIONS
85	12-17-43	REVISIONS
86	12-24-43	REVISIONS
87	1-7-44	REVISIONS
88	1-14-44	REVISIONS
89	1-21-44	REVISIONS
90	1-28-44	REVISIONS
91	2-4-44	REVISIONS
92	2-11-44	REVISIONS
93	2-18-44	REVISIONS
94	2-25-44	REVISIONS
95	3-4-44	REVISIONS
96	3-11-44	REVISIONS
97	3-18-44	REVISIONS
98	3-25-44	REVISIONS
99	4-1-44	REVISIONS
100	4-8-44	REVISIONS
101	4-15-44	REVISIONS
102	4-22-44	REVISIONS
103	4-29-44	REVISIONS
104	5-6-44	REVISIONS
105	5-13-44	REVISIONS
106	5-20-44	REVISIONS
107	5-27-44	REVISIONS
108	6-3-44	REVISIONS
109	6-10-44	REVISIONS
110	6-17-44	REVISIONS
111	6-24-44	REVISIONS
112	7-1-44	REVISIONS
113	7-8-44	REVISIONS
114	7-15-44	REVISIONS
115	7-22-44	REVISIONS
116	7-29-44	REVISIONS
117	8-5-44	REVISIONS
118	8-12-44	REVISIONS
119	8-19-44	REVISIONS
120	8-26-44	REVISIONS
121	9-2-44	REVISIONS
122	9-9-44	REVISIONS
123	9-16-44	REVISIONS
124	9-23-44	REVISIONS
125	9-30-44	REVISIONS
126	10-7-44	REVISIONS
127	10-14-44	REVISIONS
128	10-21-44	REVISIONS
129	10-28-44	REVISIONS
130	11-4-44	REVISIONS
131	11-11-44	REVISIONS
132	11-18-44	REVISIONS
133	11-25-44	REVISIONS
134	12-2-44	REVISIONS
135	12-9-44	REVISIONS
136	12-16-44	REVISIONS
137	12-23-44	REVISIONS
138	12-30-44	REVISIONS
139	1-6-45	REVISIONS
140	1-13-45	REVISIONS
141	1-20-45	REVISIONS
142	1-27-45	REVISIONS
143	2-3-45	REVISIONS
144	2-10-45	REVISIONS
145	2-17-45	REVISIONS
146	2-24-45	REVISIONS
147	3-2-45	REVISIONS
148	3-9-45	REVISIONS
149	3-16-45	REVISIONS
150	3-23-45	REVISIONS
151	3-30-45	REVISIONS
152	4-6-45	REVISIONS
153	4-13-45	REVISIONS
154	4-20-45	REVISIONS
155	4-27-45	REVISIONS
156	5-4-45	REVISIONS
157	5-11-45	REVISIONS
158	5-18-45	REVISIONS
159	5-25-45	REVISIONS
160	6-1-45	REVISIONS
161	6-8-45	REVISIONS
162	6-15-45	REVISIONS
163	6-22-45	REVISIONS
164	6-29-45	REVISIONS
165	7-6-45	REVISIONS
166	7-13-45	REVISIONS
167	7-20-45	REVISIONS
168	7-27-45	REVISIONS
169	8-3-45	REVISIONS
170	8-10-45	REVISIONS
171	8-17-45	REVISIONS
172	8-24-45	REVISIONS
173	8-31-45	REVISIONS
174	9-7-45	REVISIONS
175	9-14-45	REVISIONS
176	9-21-45	REVISIONS
177	9-28-45	REVISIONS
178	10-5-45	REVISIONS
179	10-12-45	REVISIONS
180	10-19-45	REVISIONS
181	10-26-45	REVISIONS
182	11-2-45	REVISIONS
183	11-9-45	REVISIONS
184	11-16-45	REVISIONS
185	11-23-45	REVISIONS
186	11-30-45	REVISIONS
187	12-7-45	REVISIONS
188	12-14-45	REVISIONS
189	12-21-45	REVISIONS
190	12-28-45	REVISIONS
191	1-4-46	REVISIONS
192	1-11-46	REVISIONS
193	1-18-46	REVISIONS
194	1-25-46	REVISIONS
195	2-1-46	REVISIONS
196	2-8-46	REVISIONS
197	2-15-46	REVISIONS
198	2-22-46	REVISIONS
199	2-29-46	REVISIONS
200	3-6-46	REVISIONS

U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
 (U.S. Naval Base, Pearl Harbor, Naval Supply Center)
 (Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
 HAER No. HI-92 (Page 26)

Facility K9 Sections & Details
 (Drawing 01431, dated January 22, 1942) (reduced, not to scale)



U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 27)

Transit & Pier Shed (Facility 473), Kuahua Island, March 1, 1943, Showing Deck of Quay K3 and K5 Before Reconstruction in foreground, and Pier K7/K8 in the distance with the transit shed. Facility K6 is in the right distance. National Archives II, RG-71 (Record Group-71) CB Box 101, Folder "Transit Shed"



U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 28)

Aviation Storage Unloading Wharf (Facilities K3 and K5) View looking southwest showing completed substructure and backfill. February 21, 1941, National Archives, Folder 71 CA-157T.



U.S. NAVAL BASE, PEARL HARBOR, PIER AND QUAY WALLS
(U.S. Naval Base, Pearl Harbor, Naval Supply Center)
(Facilities Nos. K1, K3, K5, K6, K7/K8, K9)
HAER No. HI-92 (Page 29)

Kuahua Quay Wall and Quay Wall Extension (Facilities K3 and K5) View looking west showing completed quaywall. Supply building KA (Fac. 447) in right background. June 15, 1941, National Archives, Record Group 71, Folder 71 CA-157T.

