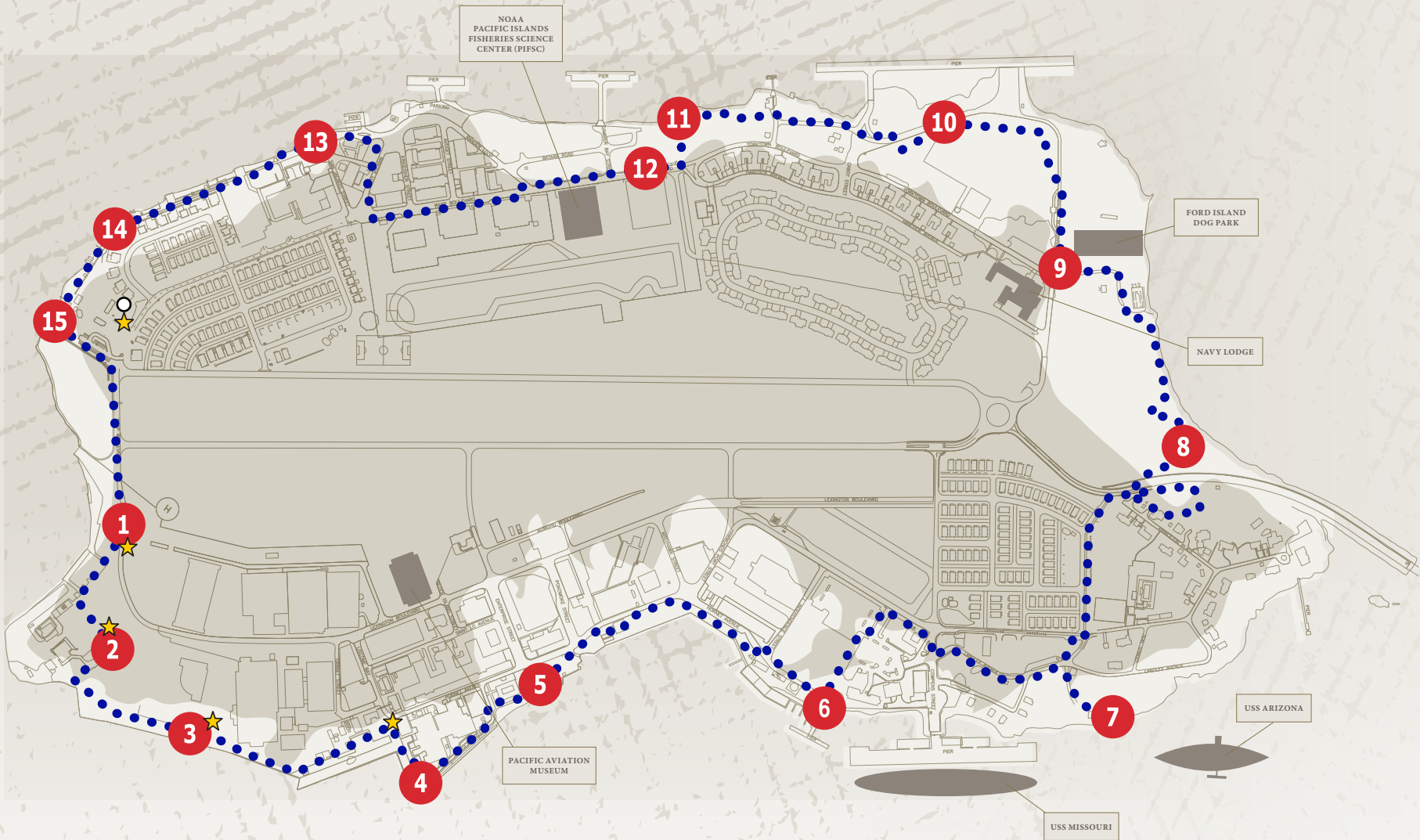


FORD ISLAND HISTORICAL TRAIL MAP



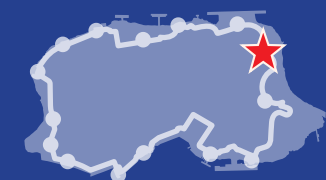
INTERPRETIVE NODE OVERVIEW

- 1 SEEN FROM HERE**
This spot provides dramatic views down towards the ocean and up to the Ko'olau mountains.
- 2 HOT AND COLD WARS**
Various hangars were damaged and repaired. Other buildings were adapted for new uses.
- 3 MAJOR EVENTS**
Pan American Airways once used the facilities on the Island for their transpacific flights. The attack on December 7, 1941 targeted Navy and Army planes in order to eliminate retaliation.
- 4 DOWNTOWN WATERFRONT**
The number of docking berths on the Island increased from the 1920s through WWII.
- 5 CONTROLLING ACCESS — BY AIR AND WATER**
The landmark tower of the Operations Building remains a visual marker for all of Pearl Harbor.
- 6 SHAPING THE ISLAND OVER TIME**
Starting in the early 1920s, the rocky flats of the Island was filled to extend the area.
- 7 DECEMBER 7, 1941 — DAY OF DESTRUCTION**
The CPO neighborhood suffered off-target bomb strikes, but survived with minimal damage.
- 8 DEVELOPMENT OF DEFENSES**
Numerous structures and weapons have been erected and removed in response to various security needs over the last century.
- 9 WWII BUILDINGS — REMAINING AND REMOVED**
The Navy built numerous structures on the former Army Air Corps side of the Island.
- 10 SHARKS AS GUARDIANS**
In Hawaiian legend, the lives and spirits of sharks and humans are intertwined.
- 11 HALE PILI — GRASS HOUSES**
Pili, a type of grass and main material for thatching Hawaiian houses, grew on the Island.
- 12 MAKAHIKI — A PERIOD OF PEACE AND FEASTING**
Makahiki was an annual harvest festival that extended over a four-month period.
- 13 LOST RICHES OF PEARL HARBOR**
Pearl oysters could once be found here, the only place among the main Hawaiian islands.
- 14 WATER — SOURCE OF LIFE**
The bounty and beauty of this harbor are renown in Hawaiian history and legends.
- 15 TWO DECADES OF ARMY AVIATION**
The entire Island was acquired in 1917 and was developed for aviation activities.

LEGEND KEY

Original Ford Island	Interpretive Node	Trail Route
Ford Island Today	Strafing Sign	Bathroom & Parking





Entirely Navy by 1939

The Army and Navy shared Ford Island from the late 1910s to 1939. The lack of expansion space for each service was noted in the 1920s. By the late 1930s the Army Air Corps was relocating to Hickam Field, then under construction. Some of the Army hangars, officers' housing, and other buildings were retained and reused by the Navy.

The Navy built numerous structures in the landfill area wrapping around this point during World War II; only one survives. See, near the shoreline, the earth-covered, barrel-arched, concrete magazine, which was used as a torpedo storehouse. It is also unique as the only remaining building of this type on Ford Island.



U.S. Navy, Bureau of Yards and Docks, from National Archives II #RG-71-1400-3-142

November 1945 Map - Showing Expansion of Facilities During WWII

Note the extensive development of the landfill area near this point during World War II. Facilities built here between 1942 and 1945 included shop buildings, storehouses, magazines, ball fields, an air raid shelter, and unnumbered shapes, some of which were Army facilities associated with the barrage balloon.



January 1941 Aerial

In the build-up to World War II an enormous amount of dredging was done, to increase the depth and width of the harbor channels. Ford Island's shoreline greatly changed when dredged materials were placed in the shallow waters along the island.

APPROXIMATE
PRE-1939 SHORELINE

YOU ARE
HERE

The torpedo magazine (Facility 212) was completed in September 1942. A barrage balloon, an element of the U.S. Army protection plan for Pearl Harbor, can be seen behind it.



BARRAGE
BALLOON

U.S. Navy, from National Archives II #71 CA-154D-1

Taboo Surrounded

Where you are standing used to be at the water's edge. The Hawaiian place name, *Kūkapu* ("taboo-surrounded and unapproachable" is one translation), designates this area on a 1901 map of Ford Island.

U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-152A-5



WWII Buildings – Remaining and Removed

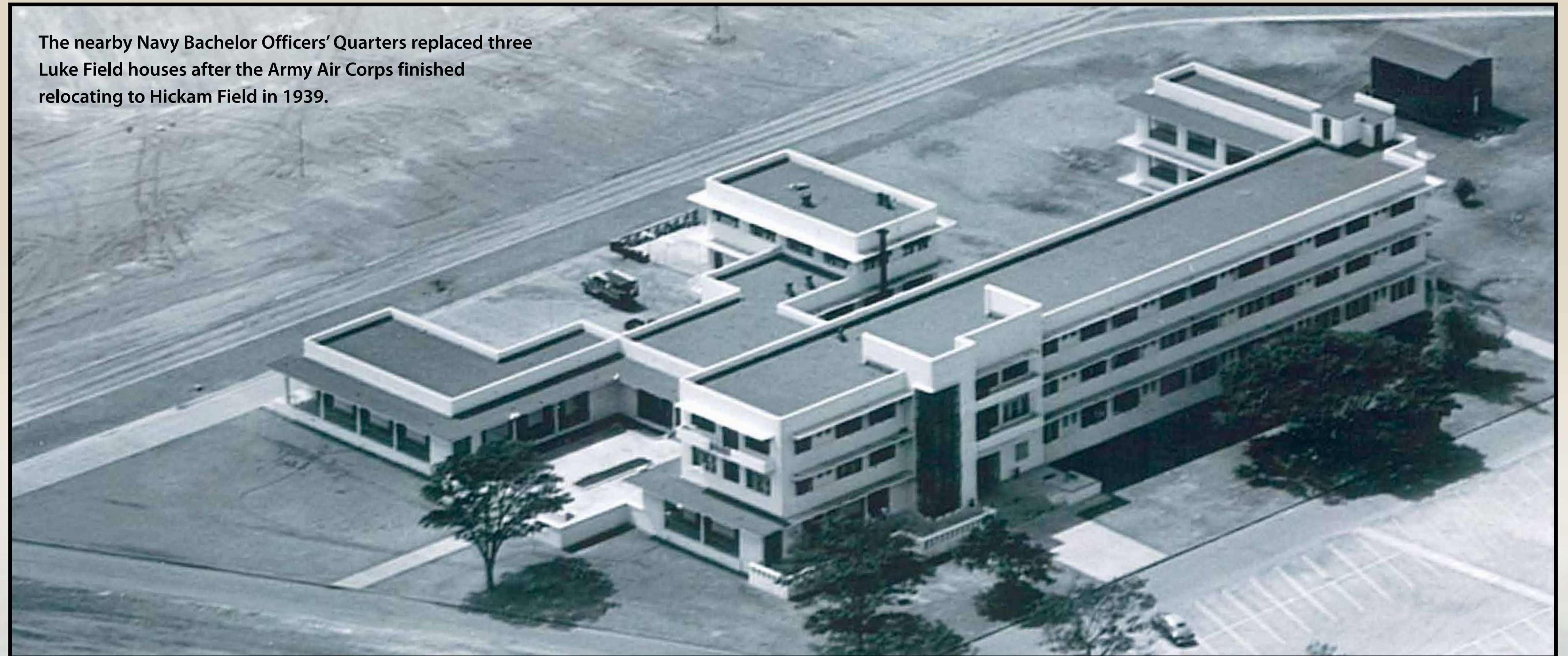
In the 1940s the Navy added several new permanent facilities on the former Army side of the island. The current Navy Lodge was designed as Bachelor Officers' Quarters (BOQ) in 1939 by the famous Hawaii architect, Charles W. Dickey.

Navy officers moved into this International-style concrete building in late 1940 or early 1941. During the attack of December 7, 1941, the BOQ served as a receiving hospital for wounded sailors and as a shelter for women and children living in the adjacent housing.

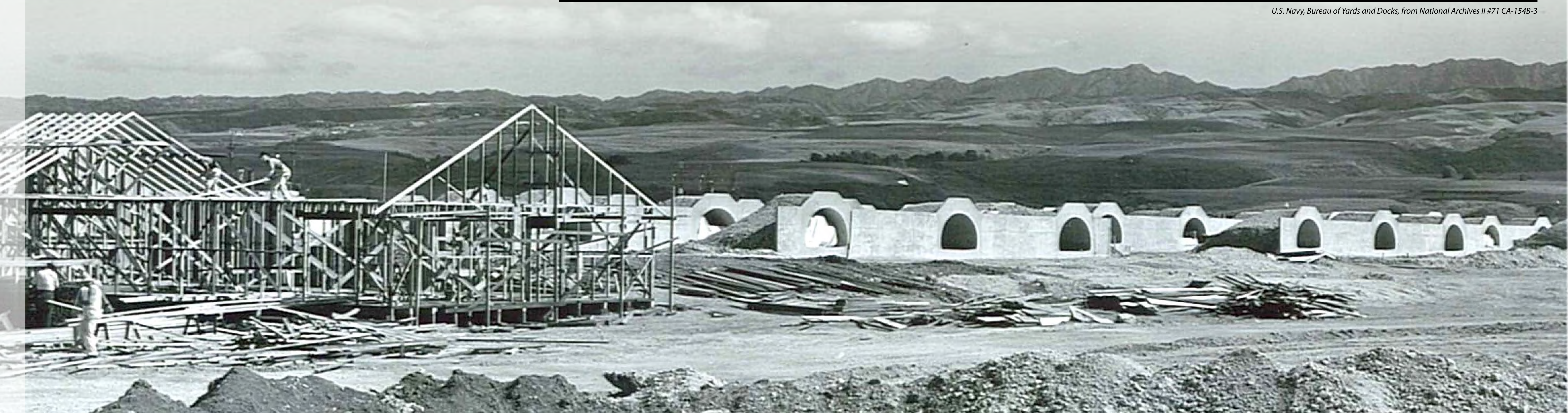
BELOW: A temporary wooden storehouse and 54 small concrete magazines (see Facilities 185 and 209 on 1945 map) were part of the 1942 construction in the landfill area. These were removed after closure of the air station.

Photo: U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-153C-6

The nearby Navy Bachelor Officers' Quarters replaced three Luke Field houses after the Army Air Corps finished relocating to Hickam Field in 1939.



U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-154B-3





Development of Defenses

Numerous defensive structures and weapons on the north end of Ford Island have been erected and removed, in response to varying security needs over the last century. The Army built Battery Adair in 1917 to deter any land attack on the harbor coming from the north. The guns were removed by 1925, but the concrete battery structure became a nine-room basement and garage in the late 1930s, when Quarters K (Facility 330) was built on top for the Navy's Fleet Air Base Commanding Officer. On December 7, 1941 it served as an air raid shelter for family members in the neighborhood and for wounded from burning battleships.



U.S. Army Museum of Hawai'i #2643



U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CB-102AA-1

This machine gun range was sited in a coral pit at the north end of the runway from 1942 through 1949.



U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-154B-10

These anti-aircraft guns, emplaced by 1921, were removed before the late 1930s. Two circular gun blocks, for similar early guns, remain near the WWII underground command post (Fac. 96).



U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-153D-3

These concrete revetments, with their dispersed placement and varying angled openings, sheltered the planes from strafing and shrapnel. They were built in response

to the December 7, 1941 attack. Prior to that date planes had been parked in rows because the biggest perceived threat was sabotage.

The revetments were removed long before the Battleship Cove neighborhood was built in this area.



Growth of a Navy Neighborhood

In the 1920s Ford Island was home for the small number of Navy aviators in Hawai'i. The neighborhoods and Navy aviation staff in Hawai'i expanded in the mid 1930s. The land area was also increasing as the 1939 photo shows. In that landfill area, near where you are standing, temporary barracks were built and a Kitchen Garden/ Victory Garden established during World War II.

In 1923 the Navy built two neighborhoods on Ford Island for aviators. The north end then had a two-story Bachelor Officers' Quarters, servants' quarters, and three officer's houses. The Chief Petty Officers' neighborhood is visible in the distance.

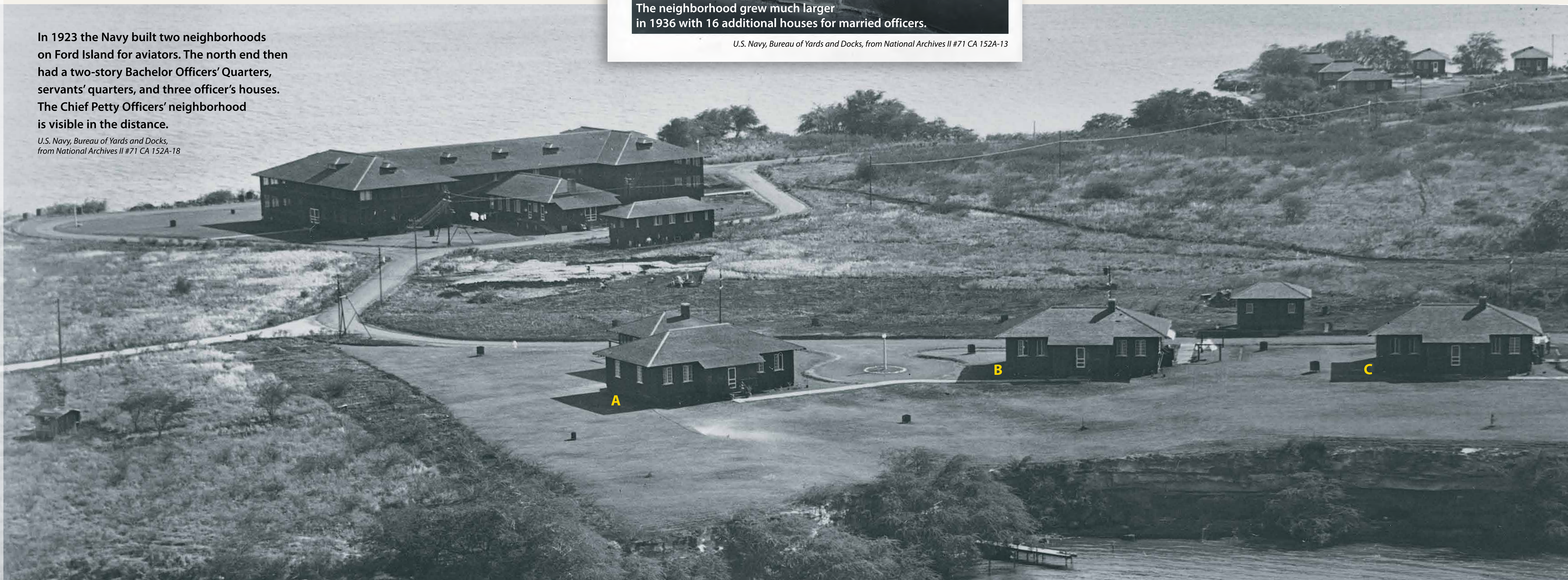
U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA 152A-18

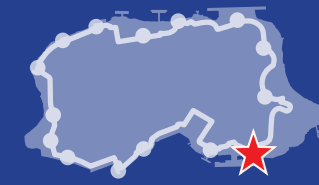


U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA 152A-13



U.S. Navy, Bureau of Yards and Docks, from National Archives II # RG71 1405-3-41





Idyllic Neighborhood

This neighborhood has simple bungalows in an idyllic setting. From 1924 to 1928 only six lucky families of Chief Petty Officers (CPO) lived in these waterfront homes. Between 1928 and 1932 three more houses were added to the CPO neighborhood. From 1937 through 1945 several CPO houses were moved out of or relocated within the neighborhood. Today, the CPO neighborhood is part of the World War II Valor in the Pacific National Monument, operated by the National Park Service.



Two CPO houses under construction in October 1923.

U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-154B-5



CPOs and other enlisted personnel helped to construct these houses.

U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-154B-9



These two houses were removed in August 1942 because they interfered with the large winches installed near here to re-float the USS Oklahoma. The house currently in this location, Facility 90, was moved here

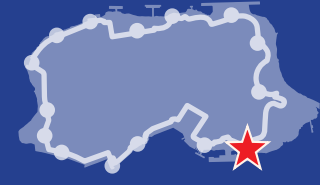
between 1943 and 1945, because the construction of Cowpens Street and gasoline pipelines, to the then-new pier on the F-5 mooring pair, required relocation of two houses (by 1963 the other one was gone).

This house, Facility 30, was moved, circa 1945, into the neighborhood of officers' houses, just north of here.

This house was gone by 1940, and during the war the site was occupied by a temporary barracks, built for the USS Oklahoma salvage crew.

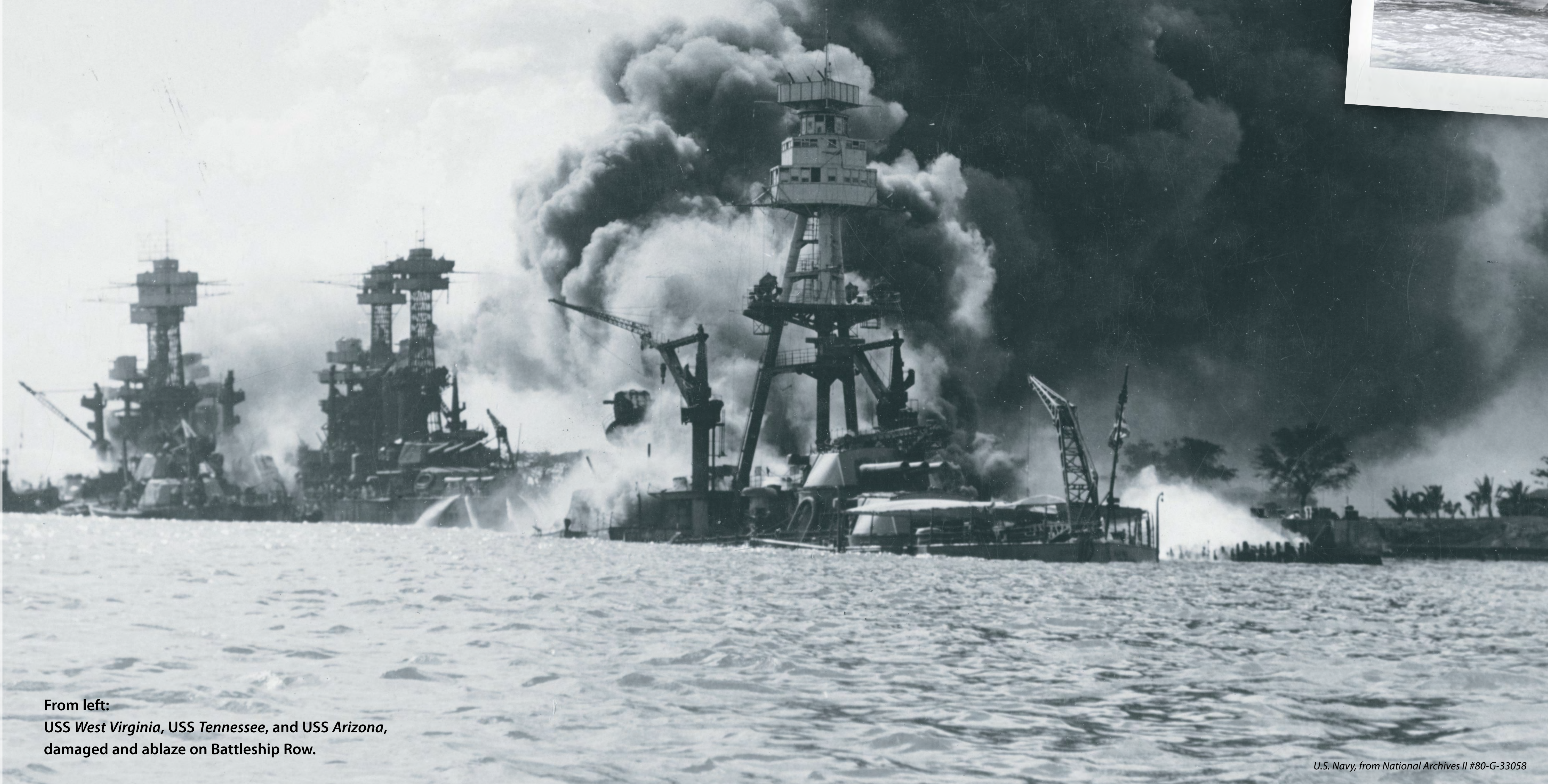
By June 1931 two additional houses, several more trees, animal pens, and a wharf had been added to the neighborhood.

U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CB-102C-2



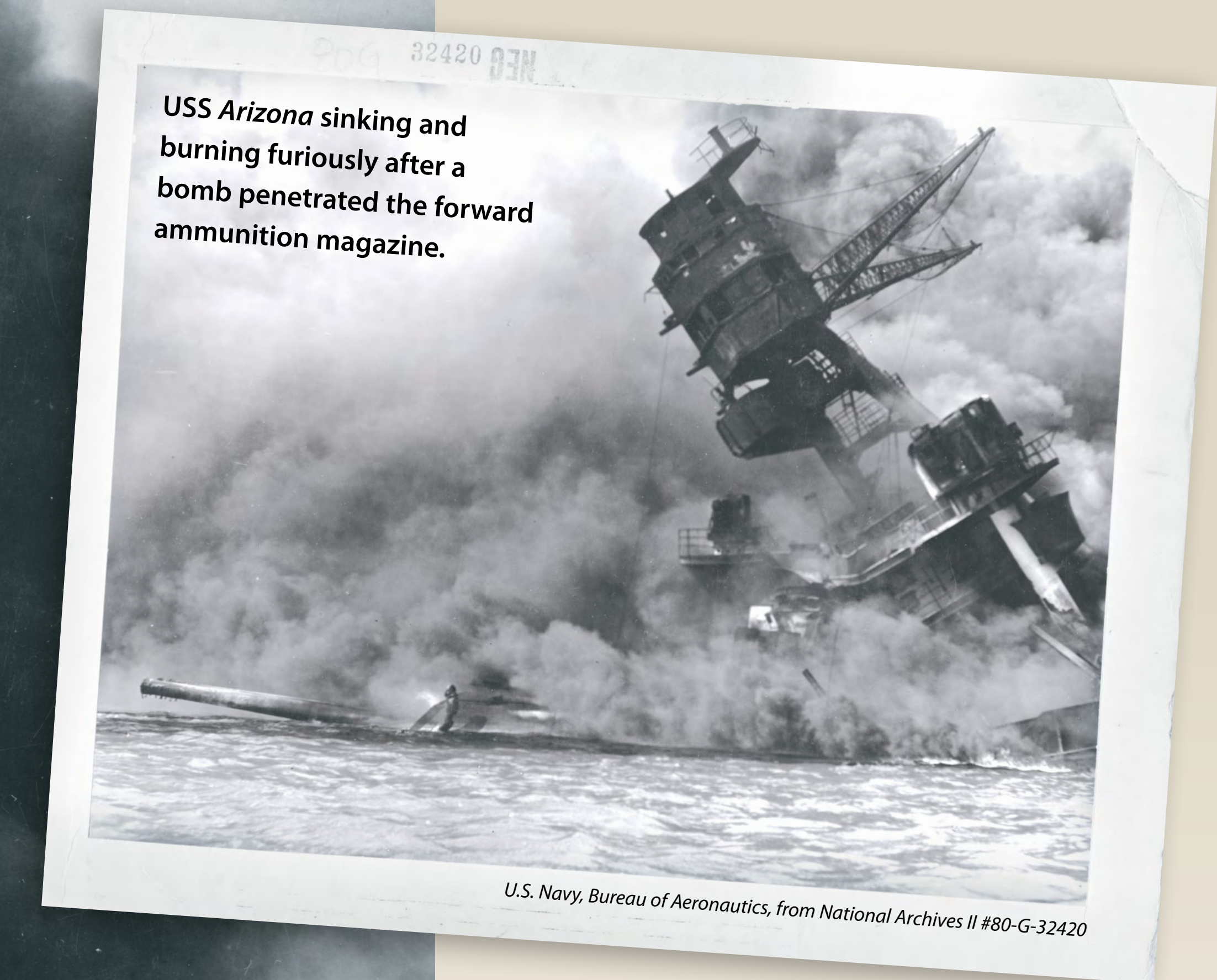
December 7, 1941–Day of Destruction

This neighborhood, adjacent to the primary attack zone, Battleship Row, suffered off-target bomb strikes, as well as falling debris, sparks, and smoke from blazing battleships and the burning, oil-coated water. It survived that horrific day, with slight damage to the houses in comparison to the destruction just offshore. The three ships in this photo, plus the *USS Maryland* and the *USS Oklahoma* were those closest to the CPO neighborhood.



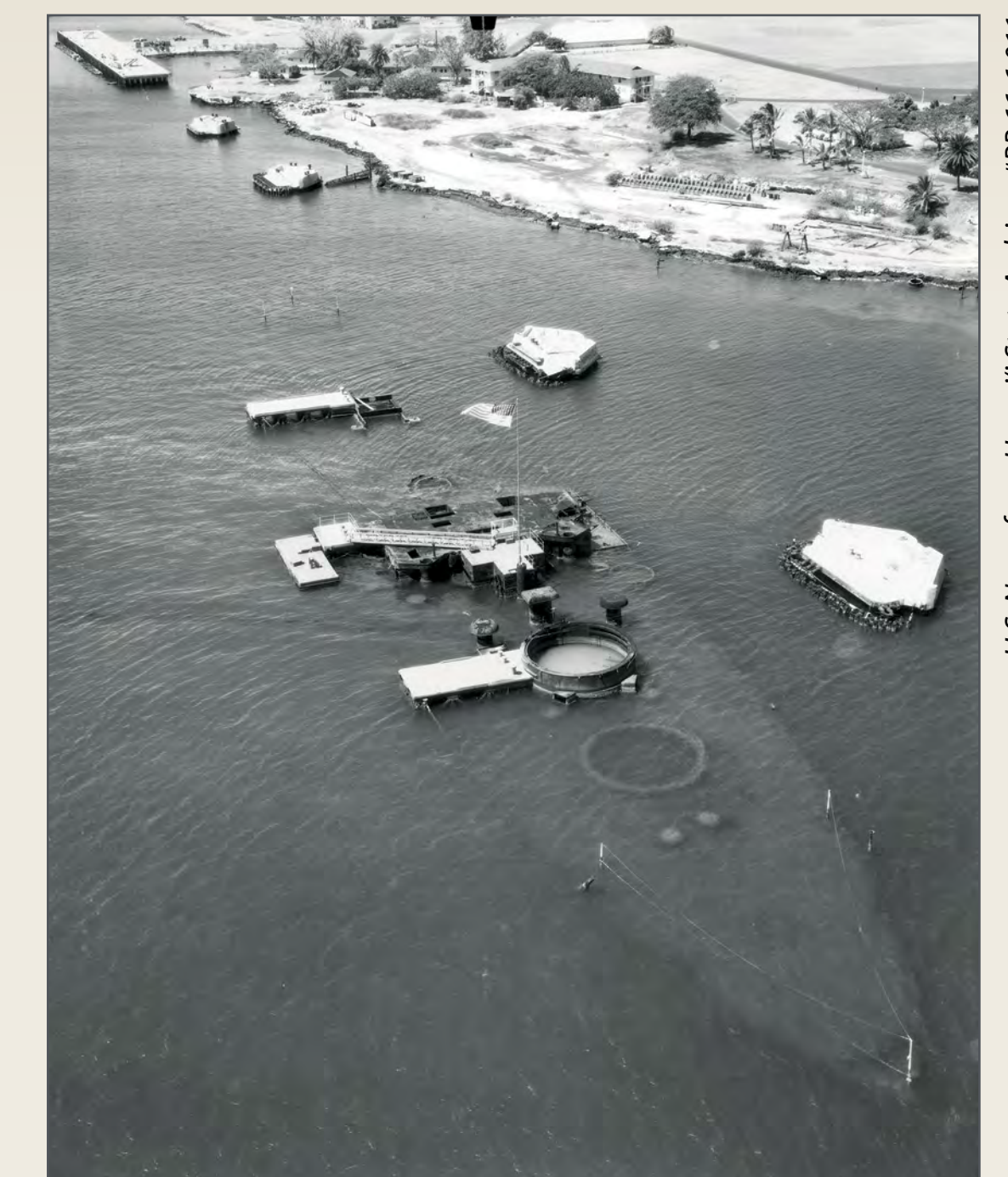
From left:
USS West Virginia, *USS Tennessee*, and *USS Arizona*,
damaged and ablaze on Battleship Row.

U.S. Navy, from National Archives II #80-G-33058



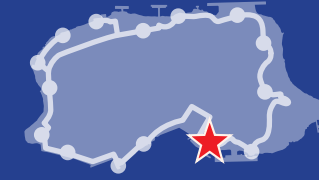
USS Arizona sinking and
burning furiously after a
bomb penetrated the forward
ammunition magazine.

U.S. Navy, Bureau of Aeronautics, from National Archives II #80-G-32420



In 1954 the *USS Arizona* Memorial
structure was not yet designed,
but a platform on the sunken
ship had been built to use for
memorial services.

U.S. Navy, from Hawaii State Archives #PP 66-6011



Major Undertakings

The land around the gasoline wharf was used for the pile fabrication yard and pile storage area for the mooring platforms project in the mid 1930s. Through much of 1943 the area northeast of this point was occupied by the winch machinery used to right the overturned USS *Oklahoma*. Before the work on that ship commenced, the sunken USS *Maryland* had to be patched by divers and refloated, which was accomplished in March 1942. The mooring pair seen in the photo became the foundations of a concrete wharf built in 1944. In the 1990s, outboard of the 1944 wharf, a new carrier pier was built, where the USS *Missouri* is now berthed.



U.S. Navy, Bureau of Aeronautics, from National Archives II #80-G-300157

By May 1943 the USS *Oklahoma* was partly righted; damage from the attack and from 17 months of immersion are evident.



U.S. Navy, Bureau of Aeronautics, from National Archives #80-G-300131

Efforts in 1942 and 1943 to refloat the USS *Oklahoma* involved numerous cables, and a central control panel to maintain even tension.



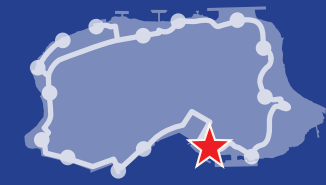
U.S. Navy, Bureau of Aeronautics, from National Archives II #71 CA-154F-12

The six pairs of mooring platforms (also called quays) built on this side of the island in 1935 became known as Battleship Row. These and the five pairs constructed in 1938 on the northwest side of Ford Island provided additional berthing space for capital ships. They were the first moorings of this type built. The design was economical compared to both pier moorings and anchored moorings, because less concrete and less dredging was required, respectively.



U.S. Navy, from National Archives II #71 CA-154F-5

Pile fabrication and storage in May 1934.



Shaping the Island Over Time

Maps from the 1910s and earlier of Ford Island show there was an islet or peninsula in this general area. Starting in the early 1920s, fill was placed on the rocky flats of the shallow waters, and wharf construction by Hawaiian Dredging Company began in 1924. The T shape of the gasoline wharf allowed its extension out to deeper waters and minimized dredging. In the 1930s further

filling on the south side of the wharf again changed the shape of the shoreline.

The 1920s wharf and associated gasoline tanks were essential to the Naval Air Station in the first half of the 20th century because gasoline was used as aviation fuel until the jet age. The tanks were all removed by 1949 but the wharf remained until 2001.



The original shoreline near this point was highly irregular. Fill was placed prior to construction of a gasoline supply wharf. Note the circular foundations of gasoline tanks inland of the fill land.

U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-152F-1

Gasoline wharf nearing completion with gasoline tanks in background.

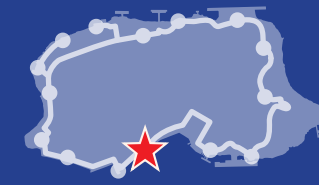


U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-152F-3

Additional housing for married Chief Petty Officers was built in 1936, on nearby fill land, part of the expansion of Navy air facilities on Ford Island.

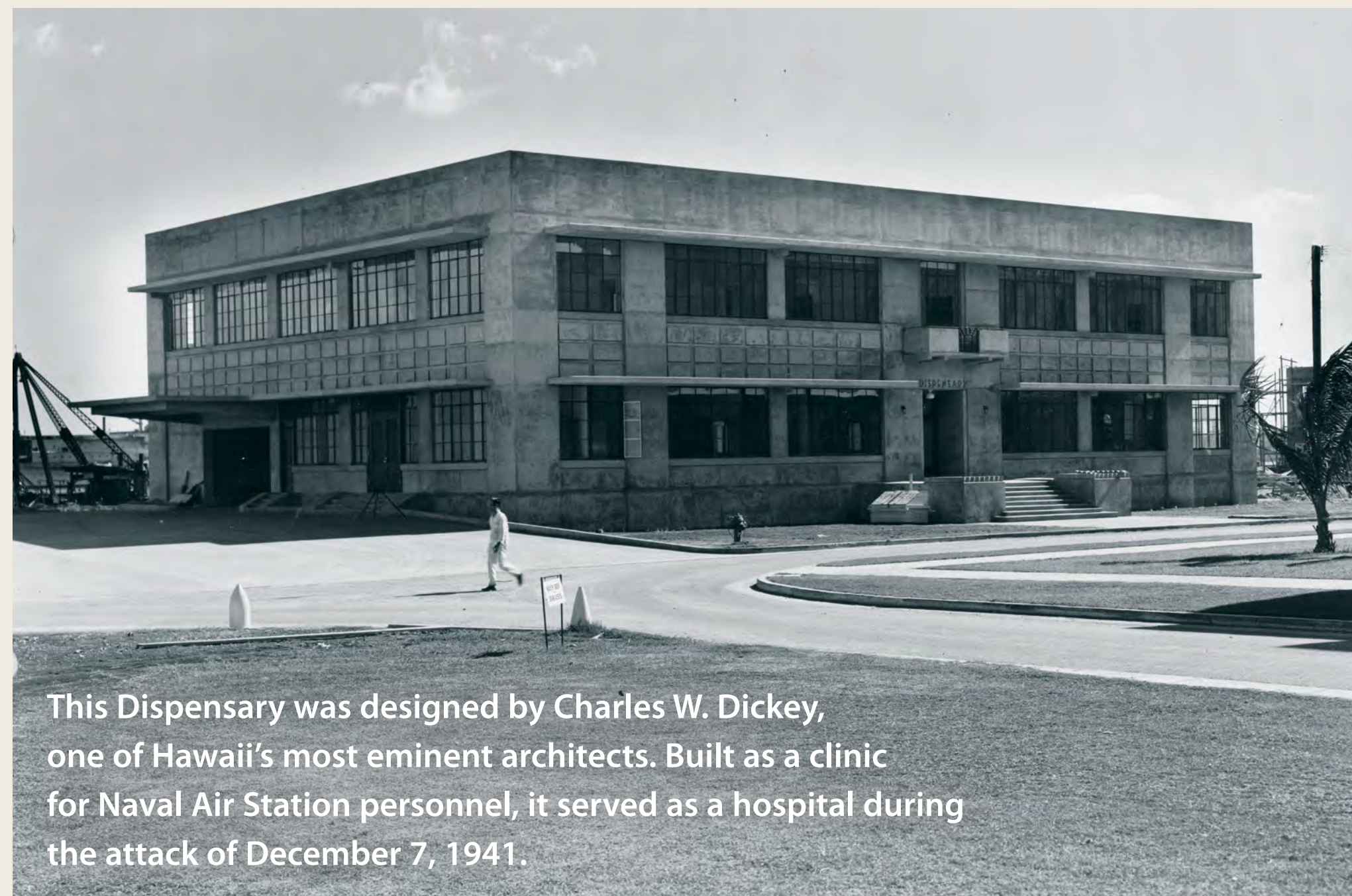


U.S. Navy, from National Archives II #80 CF-7973.2-3



Permanent Housing, Health & Recreation Facilities

Concrete buildings constructed between 1935 and 1941 marked the increasing importance of the air service arm of the Navy, especially here at Pearl Harbor. Compared to the 1920s buildings for the Naval Air Station, many built of wood, these new facilities were more substantial, larger, and provided more amenities. For instance, the enlisted barracks contained shops for barber, tailor, and cobbler, plus canteen, post office, room for reading and writing, and a large room with pool tables.



This Dispensary was designed by Charles W. Dickey, one of Hawaii's most eminent architects. Built as a clinic for Naval Air Station personnel, it served as a hospital during the attack of December 7, 1941.

U.S. Navy, Bureau of Yards and Docks, from National Archives II # 71 CA-152C-4

A bomb hit the courtyard during the second wave of the attack, and created a crater about seven feet deep. Amazingly, no one was hurt by it, although about 150 people were in the Dispensary, including many men being treated for burns and injuries from the first attack wave.

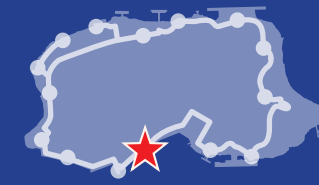


U.S. Navy, from National Archives II #80-G-32599



U.S. Navy, Bureau of Yards and Docks, from National Archives II # 71 CA-152B-3

This Barracks and Mess Hall building was designed in 1935 to hold 1,000 enlisted men. Soon after, a swimming pool and tennis courts were built nearby. The buildings now surrounding the barracks were all constructed in the 1940s.



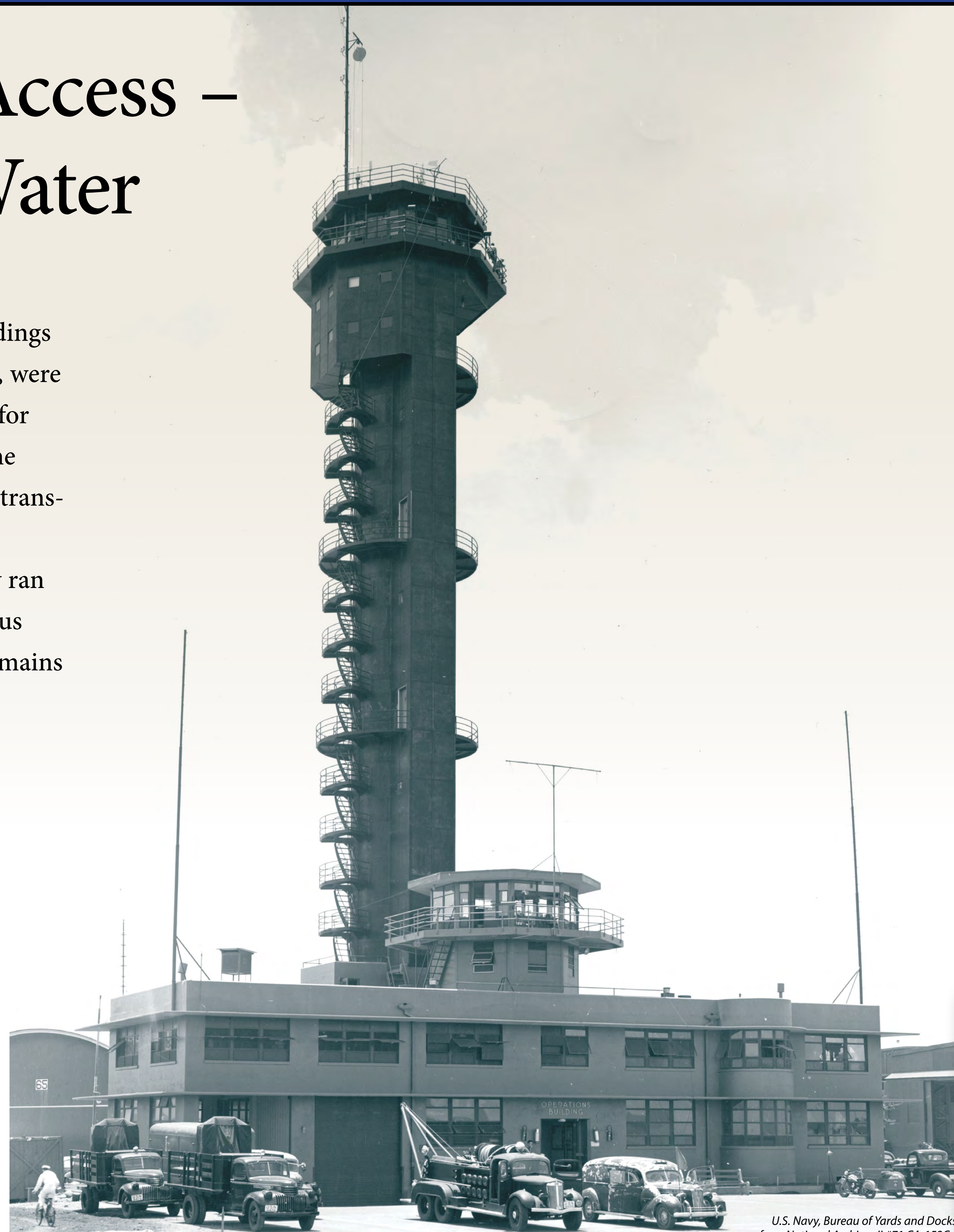
Controlling Access – by Air and Water

The landmark tower of the Operations Building, plus the ferries and ferry landings that provided the main mode of access, were some of the most memorable facilities for Ford Island residents and workers in the pre-bridge era, before 1998. The water transportation system in the harbor is gone, including the small boats that formerly ran between main base locations and various points on Ford Island, but the tower remains a visual marker for all of Pearl Harbor.



U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CB-103A-1

Unless you flew in, boats provided the only access to Ford Island. Servicemen and vehicles lined up for the ferries.



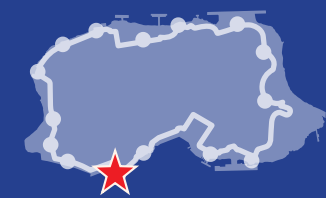
U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-152C-5

On December 7, 1941 the tower room on top of the steel water tank was not finished. The lower control room on the Operations Building was in use throughout the raid. The upper tower was completed in January 1942.



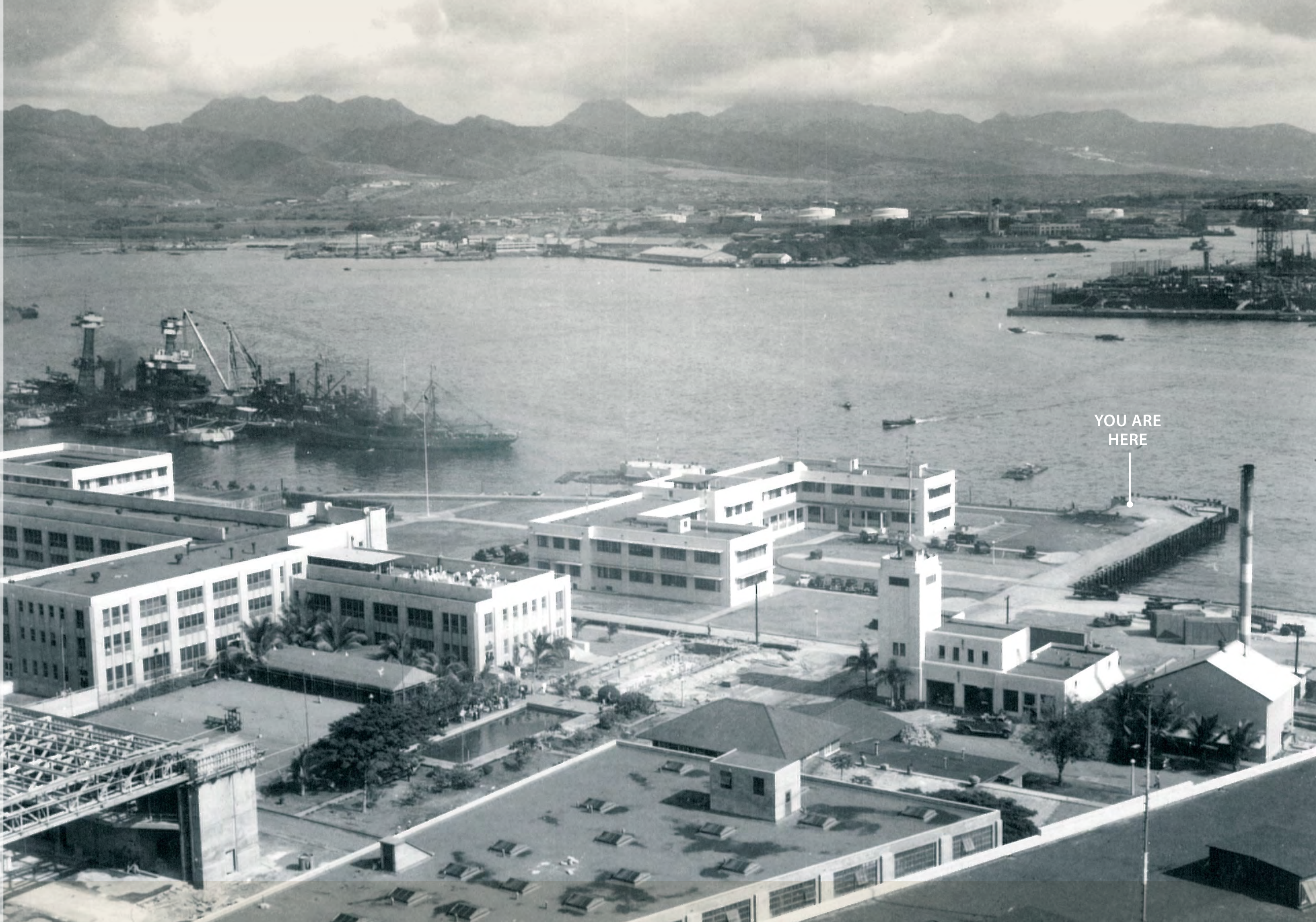
U.S. Navy, from National Archives II #80-G-32456

This offshore view shows the USS *California* during the December 7, 1941 attack. From the roof of the Operations Building, Lt. F. A. Erickson, U.S. Coast Guard, witnessed that ship listing heavily, while a “heavy sheet of flame, probably a burning barge and an oil slick drifted down on the CALIFORNIA scorching that vessel from the stern forward, burning everything on the forecastle.”



Downtown Waterfront

Starting in the 1920s and accelerating through the World War II years there was a continuing increase in the number of docking berths on Ford Island. In this vicinity, the irregular natural shoreline was changed at least twice by adding fill and building concrete retaining walls. The 1940s waterfront construction included removal of the 1920s pier and wood boat house (located over the finger piers labeled “35” on the map).



U.S. Navy, from Hawaii State Archives # PP-FUR 1-6.002

This photo was taken a few days after the December 7, 1941 attack. No battleships had been docked at the new berths near the U-shaped Administration Building (Facility 77). That structure and the trapezoidal-plan storehouse (Facility 75) had been completed just before the attack. The hangar-like aircraft storehouse (Facility 87) was more than half finished. Near the pool construction had just started on the bombproof Communications Center (Facility 208).



U.S. Navy 14th Naval District, from National Archives II #RG 71-1405-3-33

June 1940 Map, Showing This Area's Changing Shoreline

The original shore is shown by the red line, the circa 1938 fill area is outlined in blue, and the 1940 proposed waterfront alterations are drawn in dashed lines. For the 1940 work the waterfront was moved out to the southern quay of the F2 mooring pair, which was originally about 300 feet offshore. This construction also required the relocation of Facility 44 (the 1936 boat house), which was placed on its current site in 1941.



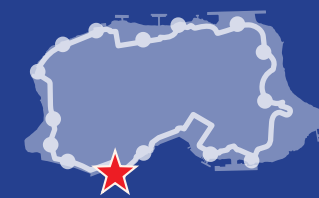
U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-154F-13

The F-1 wharf was photographed in 1940 from the soon-to-be-removed pier which had been the primary Ford Island dock since the early 1920s. The timber pilings on the F-1 wharf caught fire during the December 7, 1941 attack, due to burning oil on the harbor.



U.S. Navy, from Hawaii State Archives # PP-FUR 2-3.015

After the 1940 waterfront reconstruction large ships could unload directly onto dry land at the F-1 and F-2 berths, an improvement over off-shore moorings. From 1942 through the late 1940s, some of the buildings in this part of Ford Island were painted in camouflage patterns.



Downtown - Relocated and Key Buildings

The 1940 wharf construction in this area required relocation of the 1936 boat house (Facility 44). In addition, several large new buildings were constructed nearby in the early 1940s. The Administration and Dispensary buildings were erected on new fill land. Other facilities, such as the Final Assembly Shop, were built on available spaces between existing buildings. The trapezoid-plan storehouse and the aircraft storehouse (on site of Building 18, handball and tennis courts) replaced smaller buildings and filled their respective blocks.



U.S. Navy, Bureau of Aeronautics, from National Archives II #71 CA-152C-6

The 1936 boat house is shown at its original location, south of the F-2 mooring quays (see map on the other panel). In 1941 Facility 44 was moved northeast to cover the finger piers built at its present site.



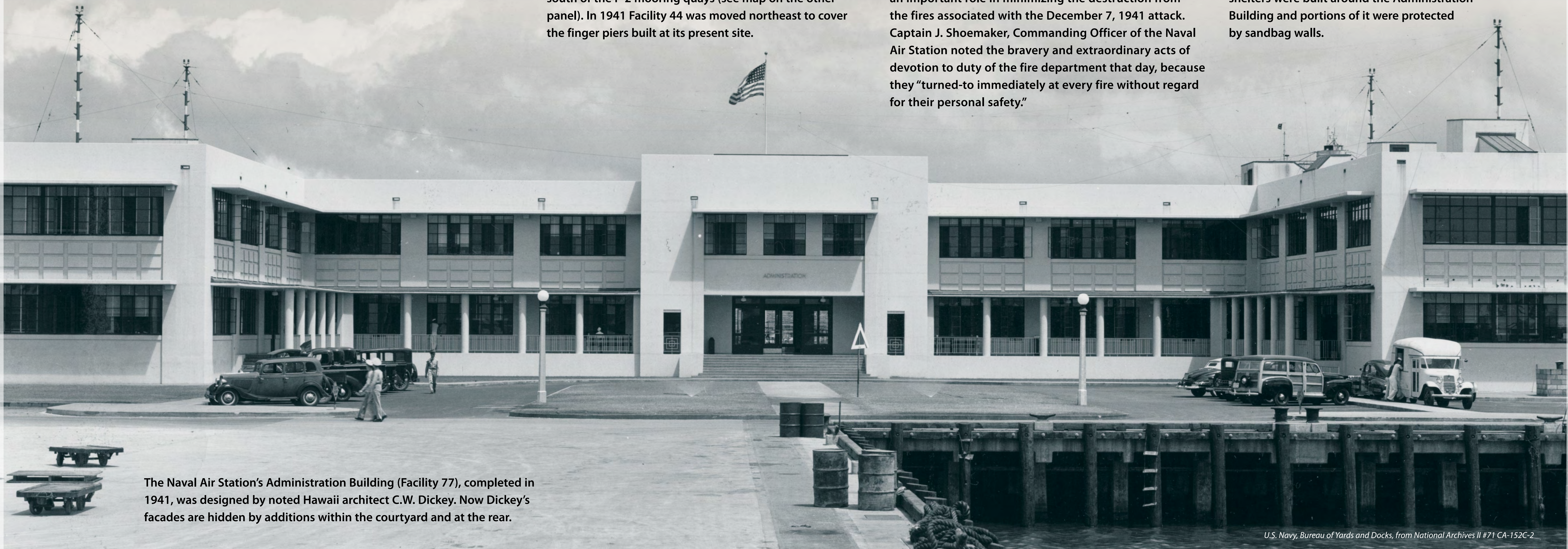
U.S. Navy, Bureau of Aeronautics, from National Archives II #71 CB-102S-1

This Fire Station (Facility 42), completed in 1936, played an important role in minimizing the destruction from the fires associated with the December 7, 1941 attack. Captain J. Shoemaker, Commanding Officer of the Naval Air Station noted the bravery and extraordinary acts of devotion to duty of the fire department that day, because they "turned-to immediately at every fire without regard for their personal safety."



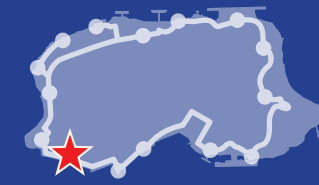
U.S. Navy, Bureau of Aeronautics, from National Archives II #80-CF-737.32-66531

After the December 7, 1941 attack, earth-covered shelters were built around the Administration Building and portions of it were protected by sandbag walls.



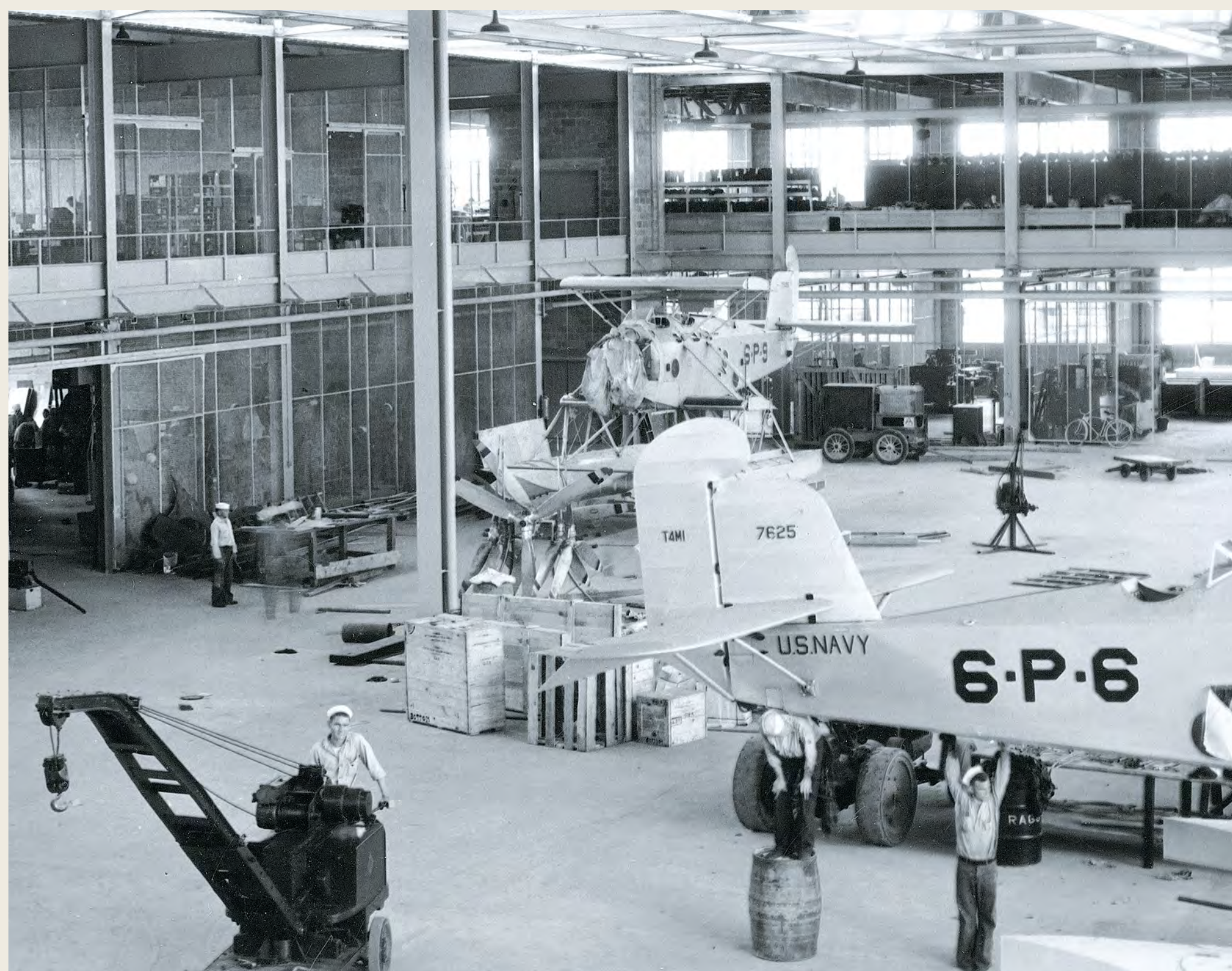
The Naval Air Station's Administration Building (Facility 77), completed in 1941, was designed by noted Hawaii architect C.W. Dickey. Now Dickey's facades are hidden by additions within the courtyard and at the rear.

U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-152C-2



1930s – Seaplanes Versus Carrier Planes

By 1932 the activity on Ford Island was named a “Fleet Air Base” rather than a “Naval Air Station,” because the Chief of Naval Operations’ emphasis then was on the Navy’s carrier forces. However, additional seaplane hangars and runways at Pearl Harbor, already funded, were built after this date. The seaplanes continued in use through WWII, especially for patrol functions.



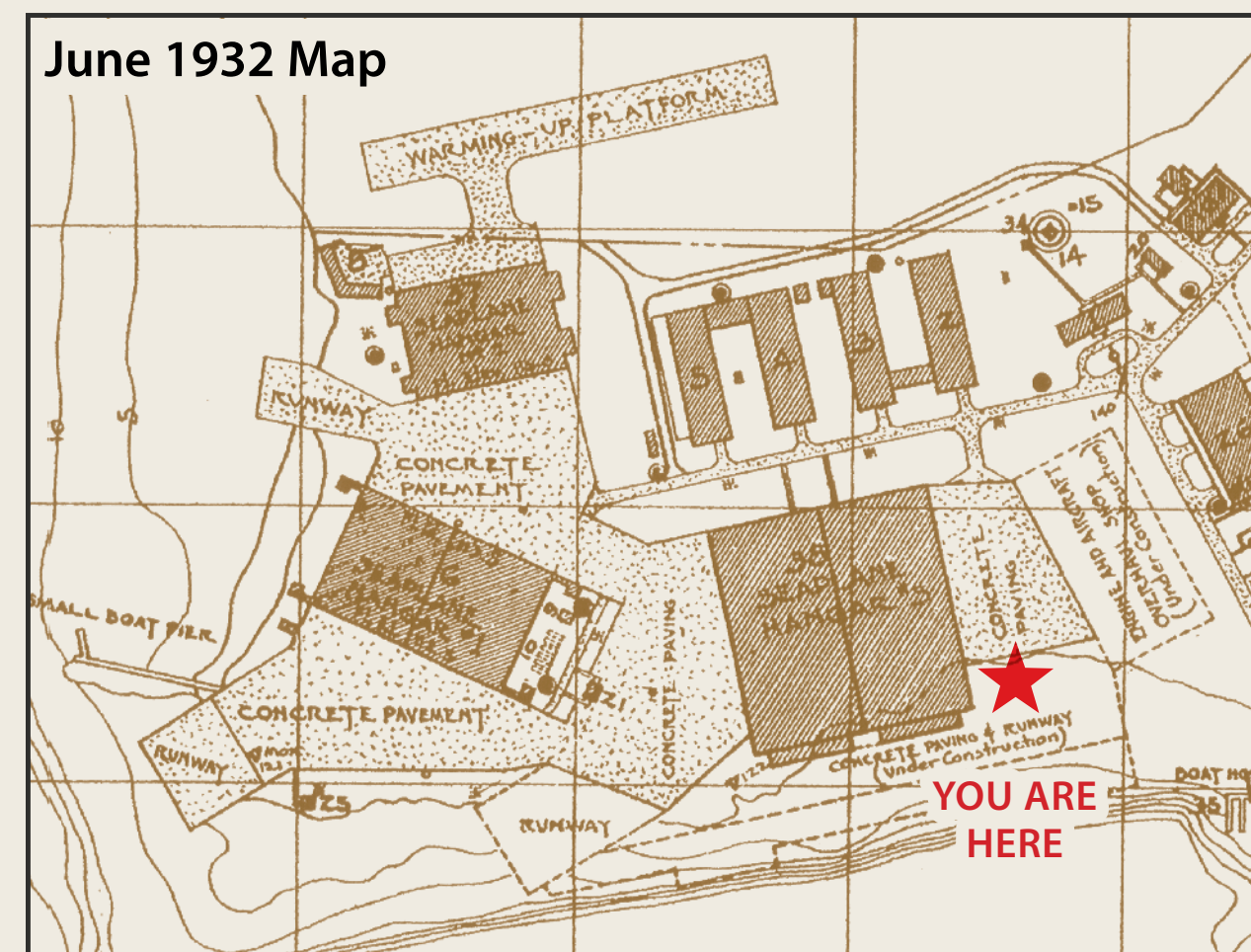
U.S. Navy, Bureau of Aeronautics, from 14th Naval District Photo Collection, Arizona Memorial Museum Association #10471

Two men hold up the end of a seaplane being repaired in the Engine and Aircraft Overhaul Shop (Facility 39).



Seaplanes on display for the visit of President Franklin D. Roosevelt in July 1934. The seaplane types in use at the Fleet Air Base in 1934 were the PM-1, PD-1, P2Y-1, PK-1 and PH-1 models.

U.S. Navy, Bureau of Aeronautics, from National Archives II #80-CF-797-32-PH 17930



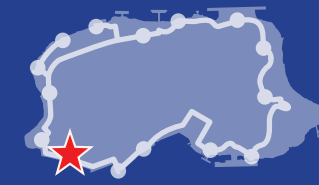
U.S. Navy, 14th Naval District, from Port Hueneme Naval Facilities Engineering Command Archives #V-N1-102



U.S. Navy, #30 in Naval Air Station Ford Island Binder

President Franklin D. Roosevelt is in the back seat of car, alongside Building 38 (Seaplane Hangar #3) during inspection visit on July 27, 1934.

Left: June 1932 Map shows Seaplane Hangars and Runways Under Construction.

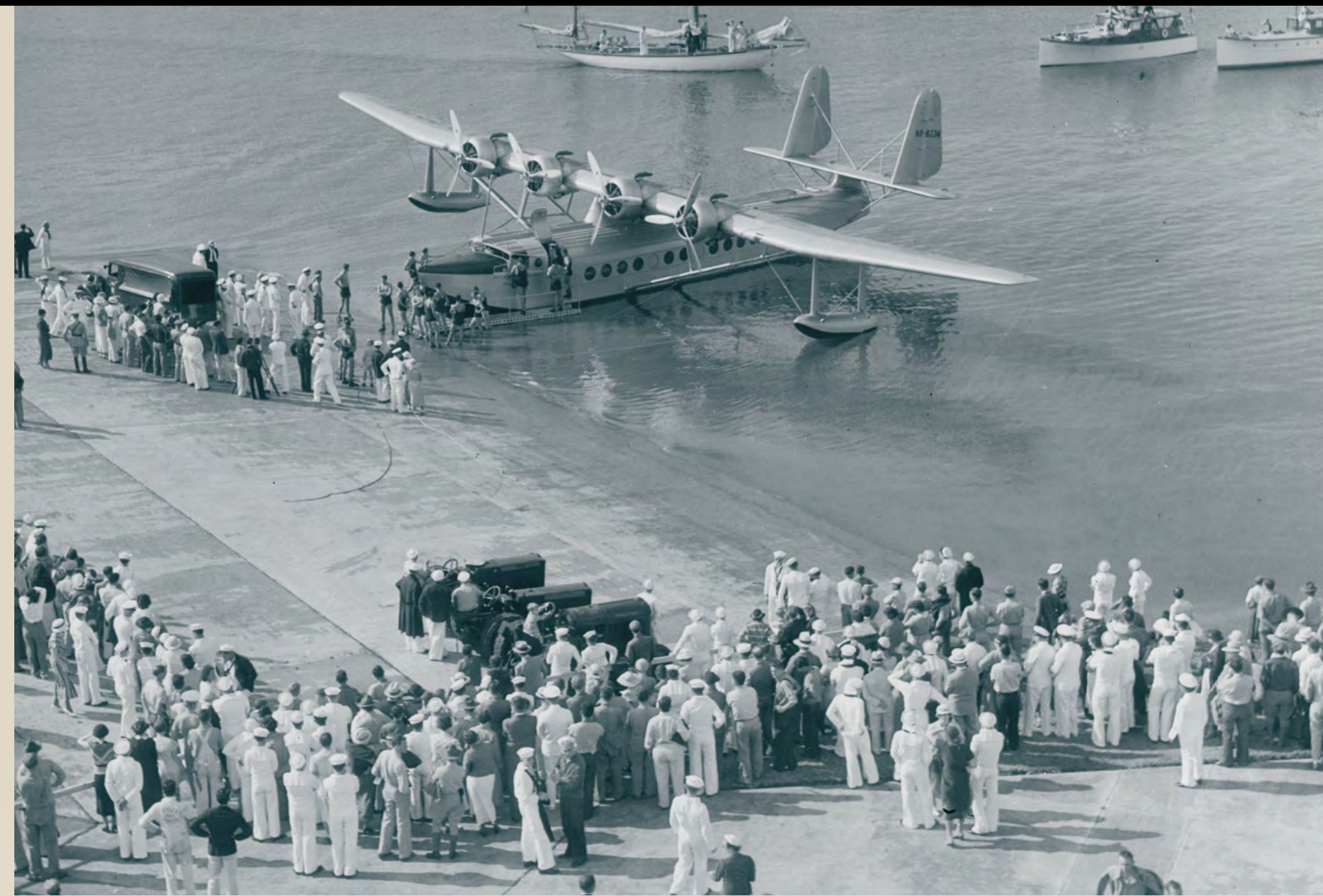


Major Events

Pan American Airways' early flights used the seaplane facilities at Ford Island, before they established the seaplane base for the airline on Pearl City Peninsula. The landings of these transpacific flights in the early and mid 1930s were exciting events at which crowds gathered to witness the historic crossings.

The waves of Japanese planes on December 7, 1941 were not anticipated. In addition to the battleships, the attack targeted Navy and Army planes, to eliminate pursuit back to the Japanese carriers. The loss to Navy aviation was 92 planes destroyed and 31 damaged.

Machine-gun emplacements were quickly erected along the seaplane ramps after the Japanese attack. The beached USS *Nevada* is visible in the distance.



U.S. Navy, Bureau of Aeronautics, from National Archives II #80-HAT-6-2

Servicemen and civilians greet the arrival of the Pan American Clipper at Ford Island on April 17, 1935. At that time, the size and speed of the plane represented remarkable engineering achievements. This flight was the first step in establishing a commercial aviation route between the United States and New Zealand-Australia.



U.S. Navy, from National Archives II #80-G-32439

Sailors clean up the wreckage in the seaplane area near Hangar #3 (Building 38) in the aftermath of the December 7, 1941 attack, while battleships burn in the background.

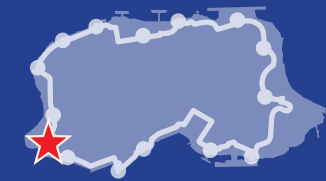


TBD

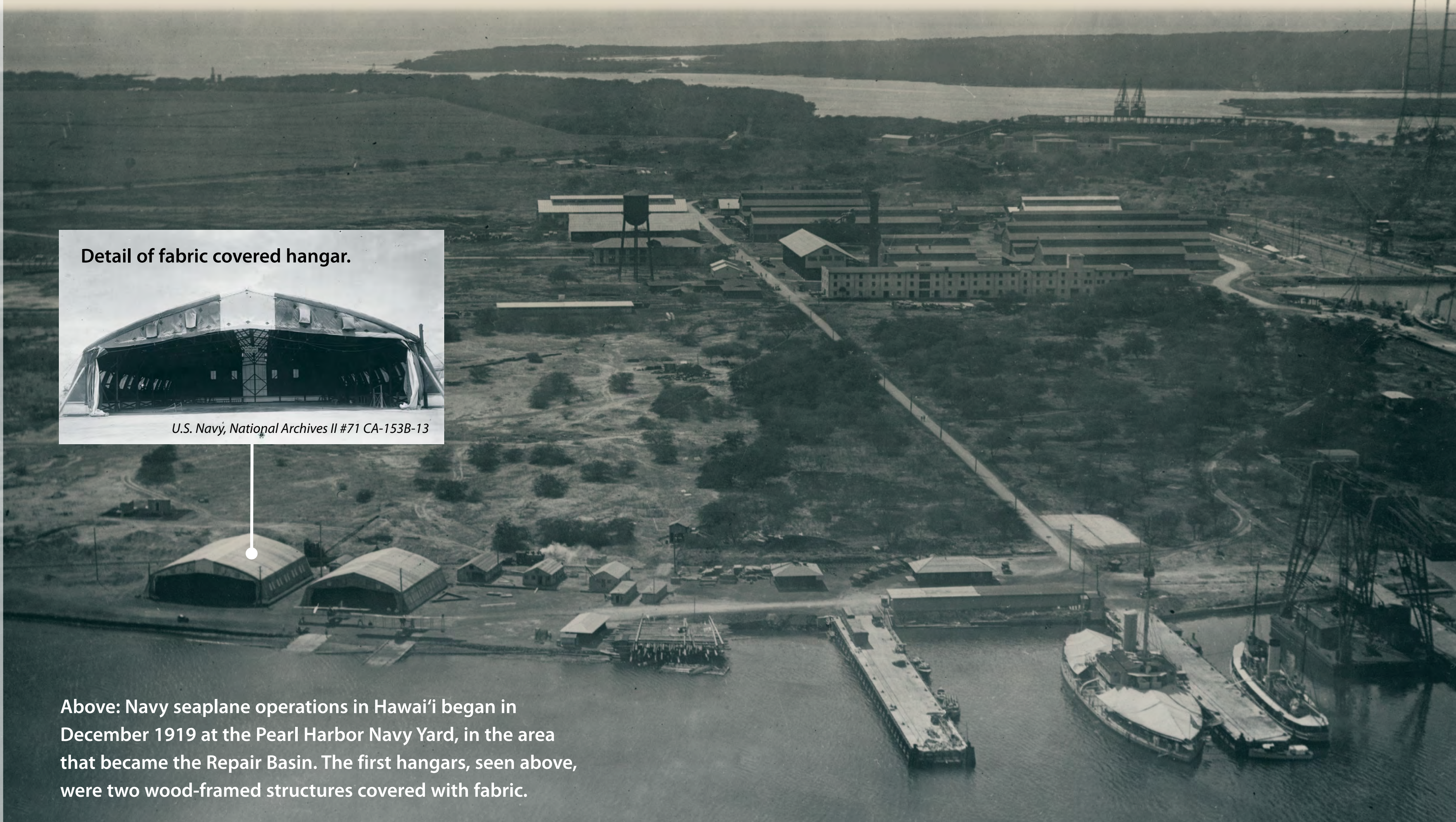
Evidence of the attack is visible in the line of strafing marks between the asphalt-paved strip and the foundation of this former hangar.



U.S. Navy, National Archives II #80-G-32492



Growth of the Naval Air Station



Above: Navy seaplane operations in Hawai'i began in December 1919 at the Pearl Harbor Navy Yard, in the area that became the Repair Basin. The first hangars, seen above, were two wood-framed structures covered with fabric.

U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-152A-47

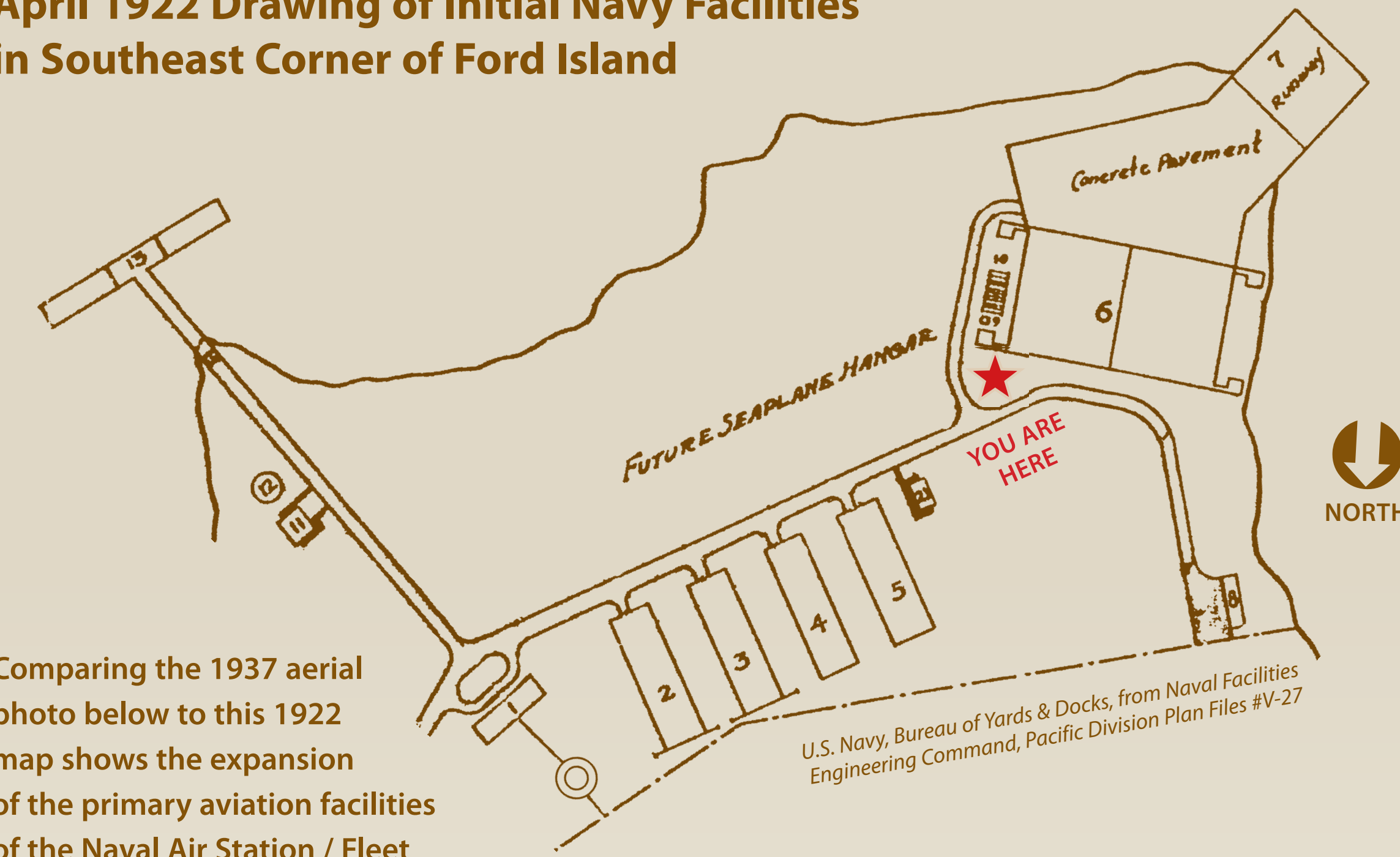
Although the Navy's air service grew rapidly in the 1920s, the number of hangars built did not keep pace with the number of planes acquired. The limited federal funding available to the Navy was first channeled to purchase planes. By 1926 the second seaplane hangar was built at Pearl Harbor (designated Facility 37 after its relocation in 1940, and now the Pacific Aviation Museum). Between 1930 and 1935 a motor test building, two more hangars, plus a large hangar-like engine and aircraft overhaul shop were built.



U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-153E-4

The first seaplane ramp (Facility S-360) and Hangar 1 (former Building 6) were completed in December 1922; Navy seaplanes were moved to Ford Island and the Naval Air Station was commissioned in January 1923 by Commander John Rodgers, Naval Aviator No. 2.

April 1922 Drawing of Initial Navy Facilities in Southeast Corner of Ford Island



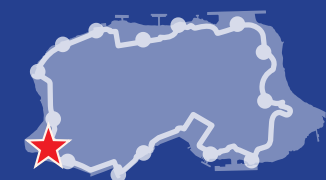
Comparing the 1937 aerial photo below to this 1922 map shows the expansion of the primary aviation facilities of the Naval Air Station / Fleet Air Base in just 15 years.

U.S. Navy, Bureau of Yards & Docks, from Naval Facilities Engineering Command, Pacific Division Plan Files #V-27



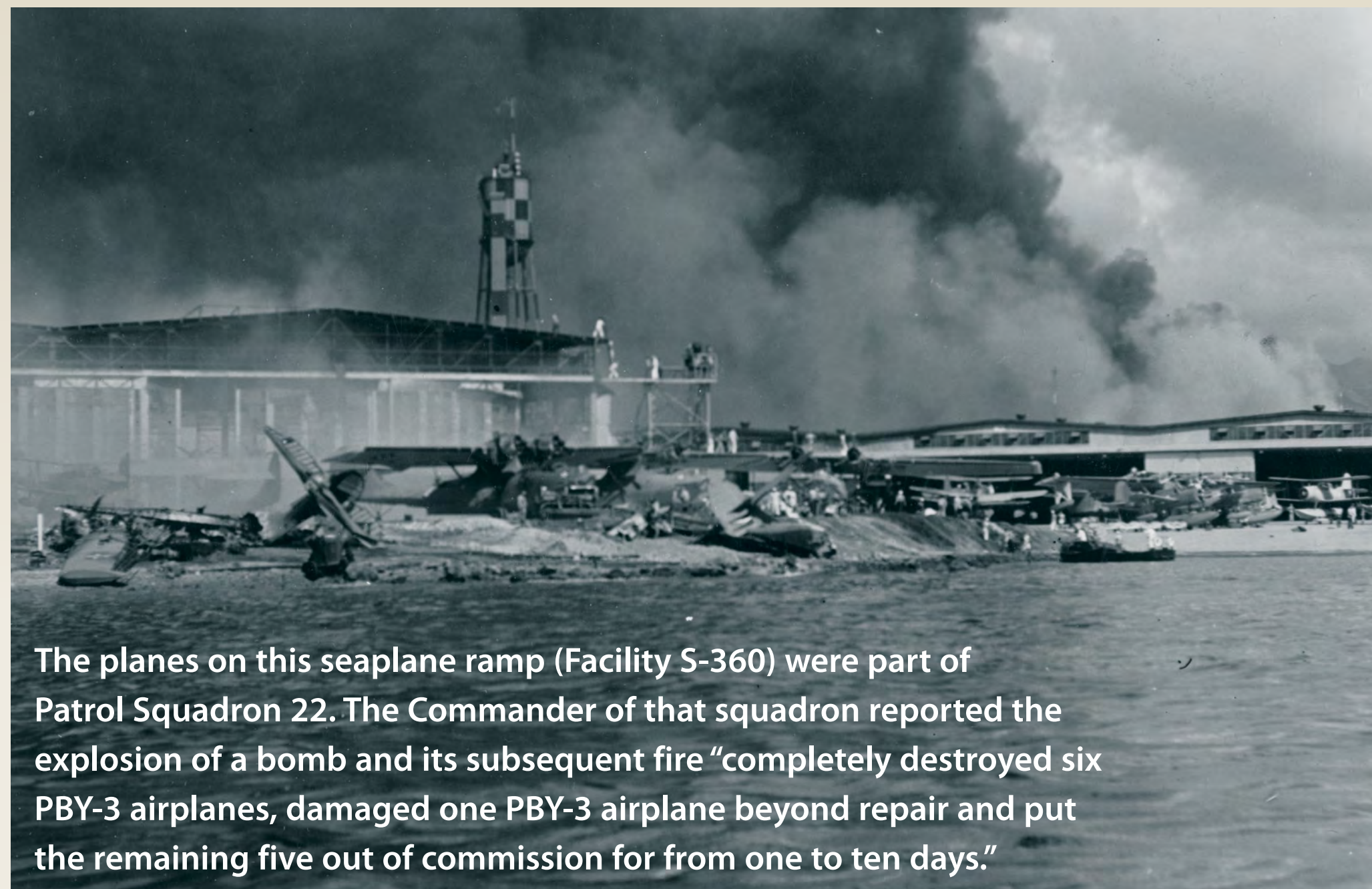
U.S. Navy, Bureau of Yards and Docks, from National Archives II #71 CA-152A-10

The USS *Maryland* steams by the four seaplane hangars, five seaplane ramps, motor test building, shop buildings, storehouses, administration building, and water tower / aerological observatory in May 1937.



Hot and Cold Wars

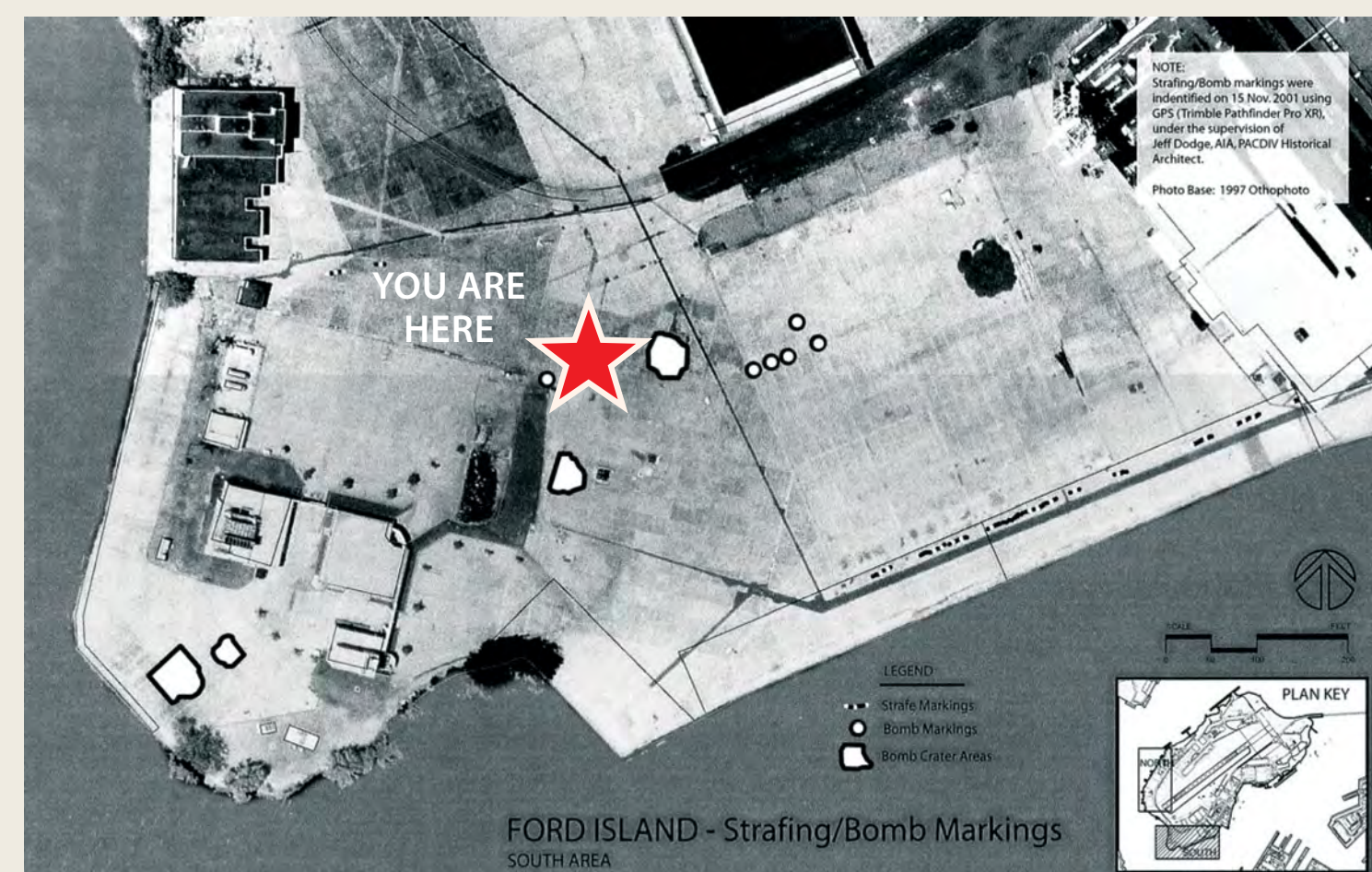
During the December 7, 1941 attack Hangar 1 was heavily damaged and the planes around it were largely destroyed. However, the hangar was quickly repaired and the planes replaced. After the closure of the Naval Air Station in 1962, buildings such as the Test Engine Stand (Facility 284) were simply mothballed. Others were adapted for new uses, such as Facility 39 which had a crucial Cold War function.



The planes on this seaplane ramp (Facility 5-360) were part of Patrol Squadron 22. The Commander of that squadron reported the explosion of a bomb and its subsequent fire "completely destroyed six PBY-3 airplanes, damaged one PBY-3 airplane beyond repair and put the remaining five out of commission for from one to ten days."

U.S. Navy, from National Archives II #80-G-32744

These markings from the December 7, 1941 attack were identified on Nov. 15, 2001 using GPS equipment and mapped on a 1997 orthophoto. You can see dramatic shrapnel scars nearby and large patches in the concrete mark some of the bomb craters.



Jeffrey Dodge, Navy Region Hawai'i Historical Architect and Helber Hastert & Fee, Planners



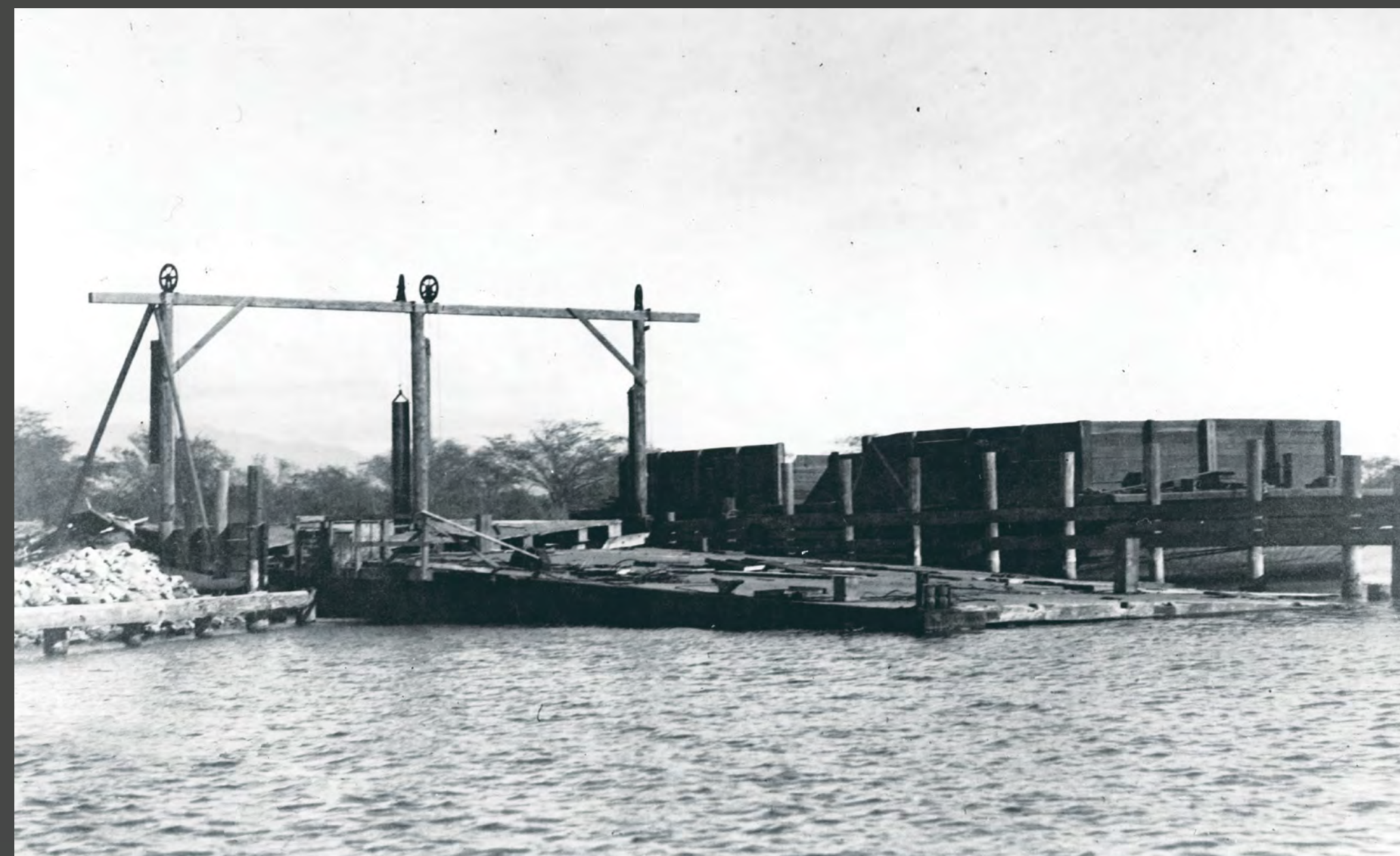
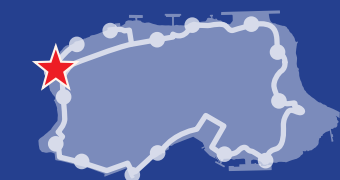
U.S. Navy, from National Archives II #80-G-19944

Bomb damage within the Naval Air Station was concentrated around this hangar. One bomb struck the small arms magazine at the hangar's NE corner, resulting in the fire that engulfed much of the building. Fire fighting was hampered since the water line to the island had been severed by the attack.



Franzen Photography, HAER No. HI-86-7

During the Cold War Facility 39 served as the training center for missile submarines in the Pacific. This training enabled the Navy to maintain the most survivable of all the nuclear deterrent weapons in this period. The deteriorated metal crane portion of this building addition has been removed, but the concrete base remains.



U.S. Army, Signal Corps, from National Archives II #111-SC-35225

This first military boat slip on Ford Island was built in the late 1910s by the Army. It was in the general area of the plantation-era cable ferry landing, and probably both operated in 1917-1918, while the last sugar crop was being harvested and construction of the first Army buildings began.



U.S. Army 5th Group, Luke Field, from U.S. Army Museum Hawai'i #2737

The earliest aviation facilities on Ford Island were constructed by the U.S. Army in the southwest corner. All the material and vehicles needed to construct these buildings were delivered at the boat landing using Navy lighters (large flat-bottomed barges), such as the one on the right of this ca. 1920 photo.



U.S. Navy, from National Archives II #80-G-458681

In 1921, next to the boat slip, a ferry landing was built by Hawaiian Dredging Company, as seen in this 1936 photo. Historic photos indicate that the L-shaped section of lava rock wall that you see near this point was built between 1921 and 1923. Ferry service in the 1920s and 1930s was provided to Pearl City Peninsula, where some military personnel had houses, as well as to a slip near the coaling dock at the Pearl Harbor main base.

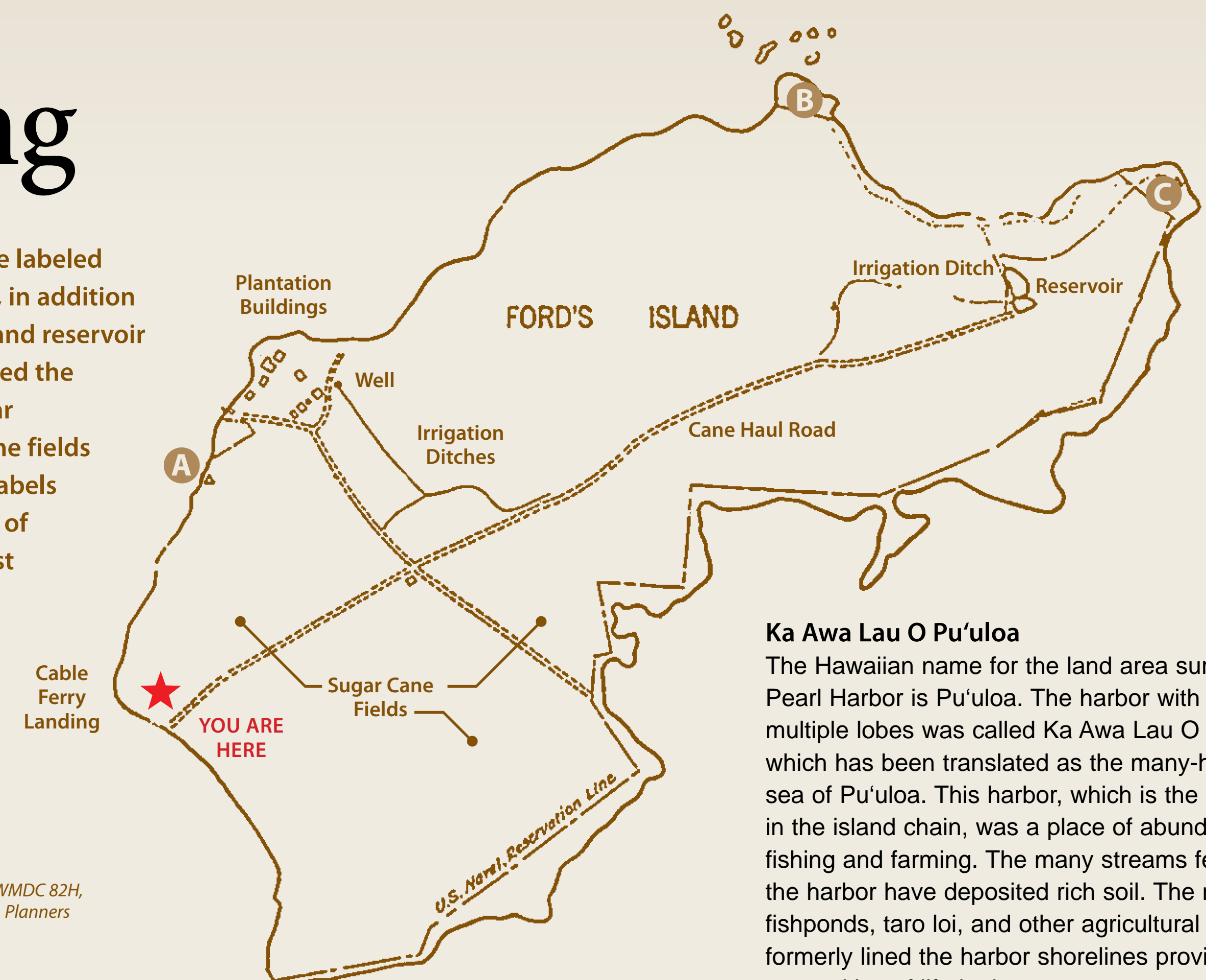
Changes in Land Use and Ferry Landing

Until a well was drilled in 1899 there was no reliable source of fresh water on the island. In the pre-western contact period dependence on rainfall meant that the island's acreage could produce only seasonal crops and pili grass for thatched roofs. In the early 1800s Don Francisco de Paula Marin, interpreter for King Kamehameha I, raised various animals here for trade with visiting ships. An 1897 Pearl Harbor map notes that the island was "covered with Algaroba [Kiawe] Trees & Alluvial on Coral."

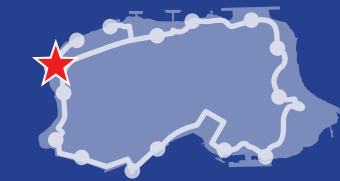
A 1901 Ford Island map labels the center as "Sugar Land." A 1917 map indicates there was still a cable ferry linking this corner of Ford Island to the "Cane Fields" on Waipio Peninsula, but also showed planned military buildings. Army structures occupied this corner of the island from 1918 to 1939. Those were moved or demolished to construct Navy seaplane ramps and parking areas in the early 1940s. In recent years housing has been built on some of the WW II-era paving.

On this 1914 map the labeled plantation buildings, in addition to the well, ditches, and reservoir for irrigation, indicated the island's use as a sugar plantation (sugar cane fields and cane haul road labels added). A small strip of land on the east coast was reserved for the U.S. Navy, and the sites desired by the U.S. Army for gun positions are labeled A, B, and C.

U.S. Army Corps of Engineers, from National Archives #RG 77 WMDC 82H, courtesy of Helber Hastert & Fee, Planners



Ka Awa Lau O Pu'uloa
The Hawaiian name for the land area surrounding Pearl Harbor is Pu'uloa. The harbor with its multiple lobes was called Ka Awa Lau O Pu'uloa, which has been translated as the many-harbored sea of Pu'uloa. This harbor, which is the largest in the island chain, was a place of abundance for fishing and farming. The many streams feeding the harbor have deposited rich soil. The numerous fishponds, taro loi, and other agricultural fields that formerly lined the harbor shorelines provided all the necessities of life in the pre-western contact era.

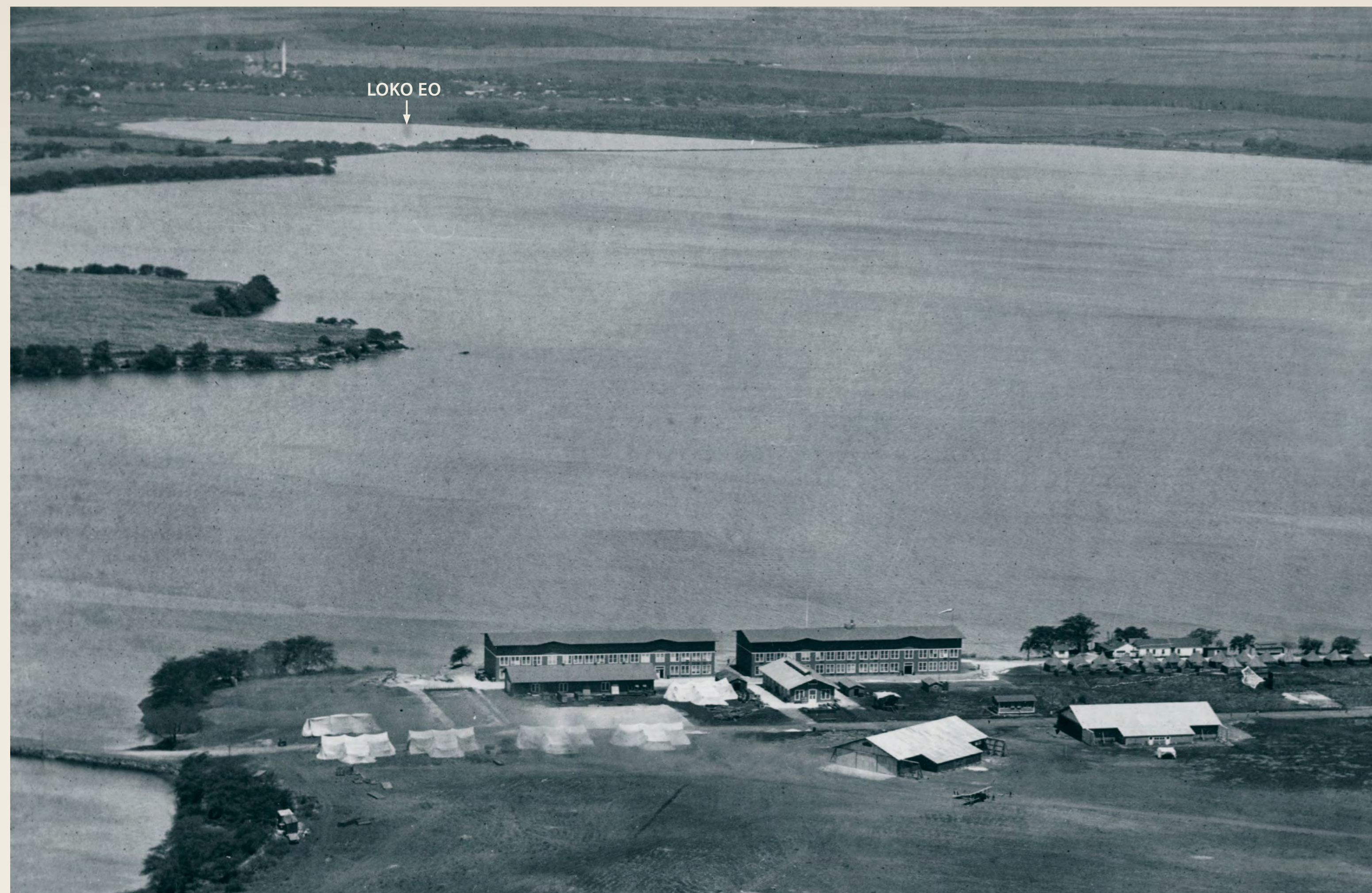


Two Decades of Army Aviation

In 1902 about 25 acres on the eastern shore of Ford Island were purchased for the Naval Base, along with other acreage on mainland O'ahu. The Navy built no structures on the island for two decades. The Army officially acquired the rest of the island acreage in 1917 as an aviation seacoast defense base. However, the War Department decided soon after that the Army and Navy branches would both develop their aviation activities there. By late 1918, two seaplane hangars and ramps, two land plane

hangars, a warehouse, and a shop building had been erected in this corner of the island, and the Army's 6th Aero squadron was transferred here from Fort Kamehameha. In 1919 the Army officially named their installation Luke Field, to honor Lieutenant Frank Luke, an ace pilot who was killed in action in France.

Below: During the early years of operations some planes and personnel were still sheltered under canvas, until more hangars and housing could be built. Waipio Peninsula is at the upper left in the photo and, near the top center, Loko Eo, a large fishpond which is now a golf course.



U.S. Navy, from National Archives II #71 CA-152A-33

U.S. Navy, from National Archives II #71 CA-152A-21



The Army installation had grown substantially by 1923. On the other side of the island, the Navy had just constructed its first aviation facilities, including seaplane hangar and ramp, shops, storehouses, photographic laboratory, utility structures, and office building, as well as personnel support buildings such as barracks, mess hall, and dispensary.

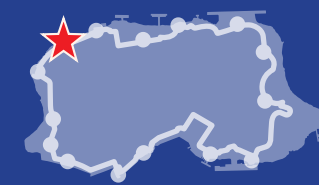


1936

U.S. Navy, from National Archives II #80-G-458680

Comparing the 1923 and 1936 photos shows several additional buildings and a paved runway had been constructed at Luke Field in the intervening years.





Water—Source of Life

The bounty and beauty of the waters of this harbor were renowned in Hawaiian history and legends. Among the many legends associated with the waters of Pearl Harbor is a well-



John E. Randall

Hawaiians have different words for each development stage of this choice indigenous fish, called mullet in English. The 'anae is the full-grown fish, and 'ama'ama is the name for the slightly smaller stage.

In addition to the mullet the waters provided many other kinds of seafood — various types of fish, shrimp, clams, and oysters, including the pearl oysters from which the harbor derived its English name.

known story, with several oral and written versions reported, explaining the periodic mullet migration between Honouliuli (West Loch) and Lā'ie.

In addition to the mullet the waters provided many other kinds of seafood — various

Loko Weloka (also spelled Weloko and Welokā)

The fishpond on the east side of Pearl City Peninsula, appears unaltered in this May 1944 photo. Tradition reports that it was built about 350 years ago. The 1903 *Commercial Fisheries of the Hawaiian Islands* noted that to build the loko “the natives formed a line from the shore to the mountain and passed the lava stone without once touching the ground in

transit. As the distance is considerably over a mile, this is significant of the density of the population at that time.” In late 1944—early 1945 it was filled to provide additional land for warehouses and open storage areas of the Naval Supply Depot Provisions Annex. Supplies flowed through there to the troops in the advanced bases of the Pacific during World War II.



This late 19th century map of the Pearl Harbor basin, or Pu'uloa area, shows numerous named fishponds (indicated by Loko before the name), as well as many unnamed ones along the shoreline of the lochs. By the 1890s this area had been depopulated by conflicts between warring chiefs, and by Western-introduced diseases; therefore, many fishponds were no longer maintained, and their names no longer in use. For instance, the one at the tip of Waipio Peninsula is called an “old fishpond,” with no other name, while others are simply indicated by the fishpond walls. The areas labeled “Rice fields” on this map would have been used for taro lo'i (irrigated terraces) in earlier eras.

U.S. Navy, Bureau of Equipment, from National Archives, Suitland, MD courtesy of Jeffrey Dodge



J.J. Williams photo, from Bishop Museum Archives #SP 115,254

This photo of people on a fishpond wall and sailors in the small boat has no date or specific location noted, but is titled “Tour party at Pearl Harbor.” Although used as a pier by these folks for their picnic outing on the water, the original function of this wide stone wall was to create a sheltered enclosure to raise and harvest fish. Hawaiian fishponds embodied an advanced system of aquaculture and were remarkable engineering feats of unmortared masonry that could withstand constant tidal action.

U.S. Navy, Bureau of Aeronautics from Hawai'i State Archives #PP-FUR 2-3.014



Stationed on an Island

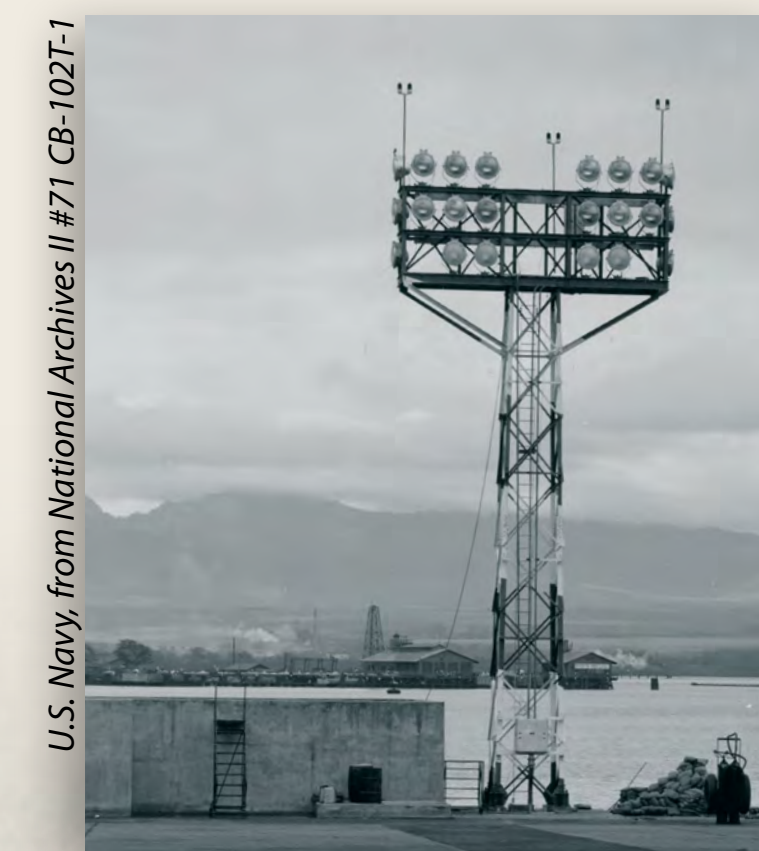
There was no shortage of work to do in the early years of this aviation station. Some recreational facilities were provided on the island, but most of the personnel preferred to escape the strict regime and isolation with weekend passes to town. Even with trained and dedicated mechanics, aviators in these early years took great risks, and funerals were not rare events. Major Sheldon H. Wheeler, Commander of Luke Field, was flying an observation biplane in a flight demonstration on July 12, 1921 when the plane nose-dived onto the field. When a new Army airfield opened near Schofield Barracks the following year, it was named Wheeler Field in his honor.

This 1921 photo shows numerous planes on Luke Field as well as many more in the rectangular crates, awaiting assembly. Wood-framed fabric hangars, from the French manufacturer Bessonneau, were erected for temporary storage.



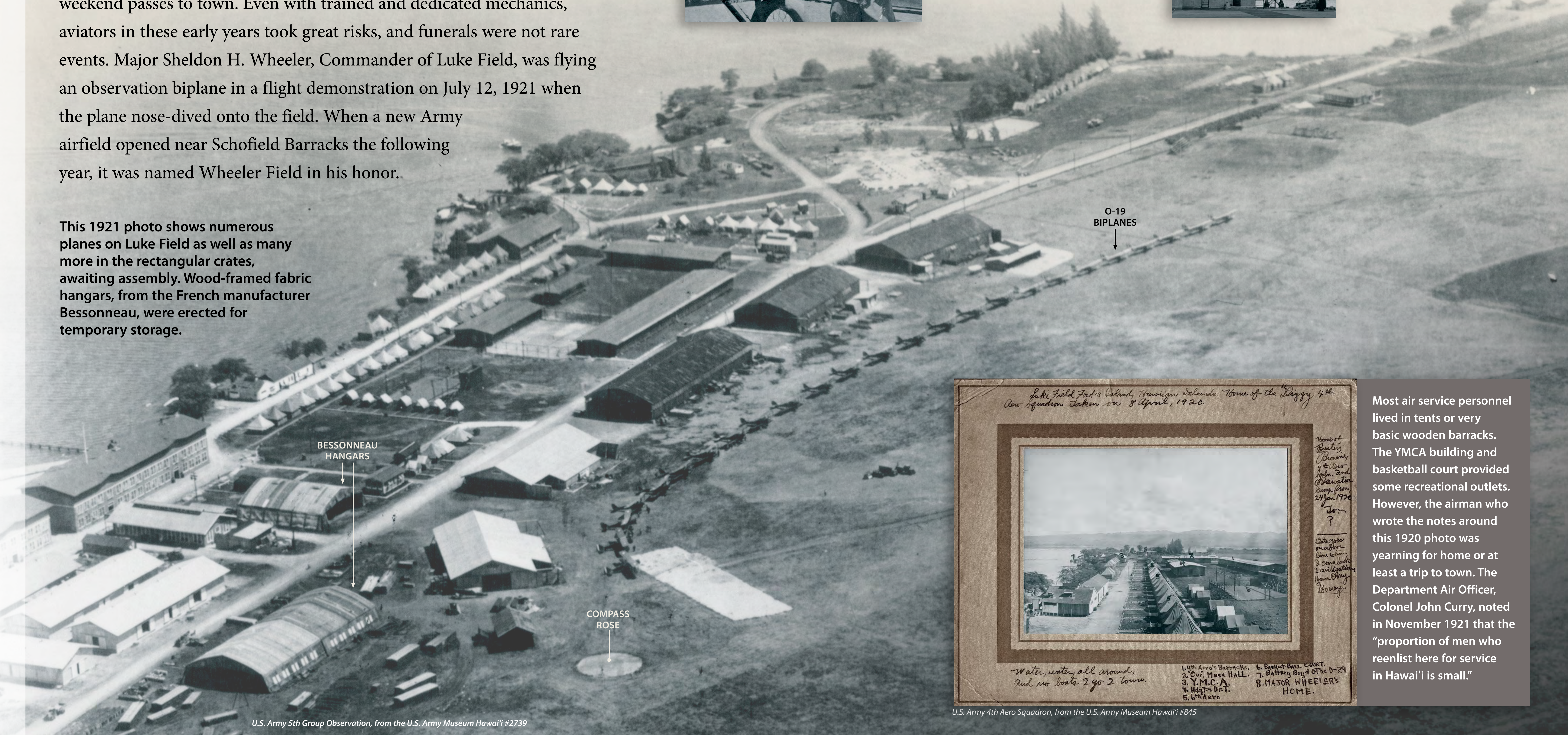
From the U.S. Army Museum Hawai'i #4586

A young airman plays his ukulele in front of a Fokker D.VII. This German World War I aircraft was so prized that the Allies required surrender of all surviving planes as a part of the Armistice ending the war. These Fokker planes were used in more than a dozen countries in the postwar period.



U.S. Navy, from National Archives II #71 CB-1027-1

After the Army moved its aviation operations to Hickam and Wheeler Fields, the Navy built four seaplane ramps in this corner of Ford Island, with associated parking areas and support structures, such as this floodlight tower. Behind you there are strafing marks in the concrete from the December 7, 1941 attack.



O-19
BIPLANES

BESSONNEAU
HANGARS

COMPASS
ROSE

U.S. Army 5th Group Observation, from the U.S. Army Museum Hawai'i #2739



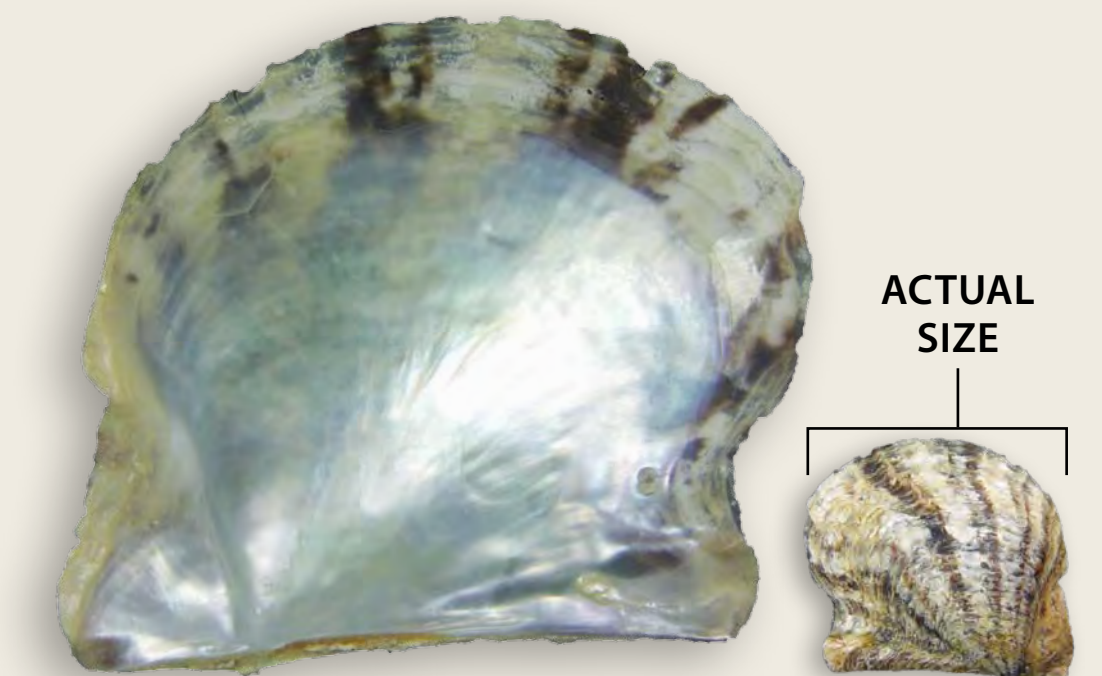
U.S. Army 4th Aero Squadron, from the U.S. Army Museum Hawai'i #845

Most air service personnel lived in tents or very basic wooden barracks. The YMCA building and basketball court provided some recreational outlets. However, the airman who wrote the notes around this 1920 photo was yearning for home or at least a trip to town. The Department Air Officer, Colonel John Curry, noted in November 1921 that the "proportion of men who reenlist here for service in Hawai'i is small."



Joseph D. Strong, from Bishop Museum Archives #SXC 117,316

Joseph D. Strong, a San Francisco artist who enjoyed King Kalākaua's patronage for several years, painted this view of Pearl Harbor from Kapūkaki Hill (Red Hill area) in 1889. By this date the area was more sparsely populated than in the Kamehameha monarchy and earlier eras, due to many reasons, including diseases and population movement from the countryside to Honolulu.



Dr. Fabio Moretzsohn, Harte Research Institute #2011_02_08_0458 & _0460

Lost Riches of Pearl Harbor

ORIGIN AND DISAPPEARANCE OF THE PEARLS

Tradition tells us that Kānekua'ana, a female sea serpent or lizard (mo'ó) from Tahiti, brought the type of oysters (pipi) that produce pearls (momi) to this place. Among the main Hawaiian islands, only in these waters were the pearl oysters found. This species is the reason for the place names, both Pearl Harbor in English and Wymumme (the spelling in some early 1800s accounts). This would be Wai-momi (Pearl water or Pearl River) in standardized Hawaiian spelling; however, this is a post-western-contact name for the harbor.

Pearl Harbor's oysters declined after the mid 1800s. Westerners have several explanations for the loss of the oysters, including large-scale land use changes, such as ranching and sugar cultivation, which resulted in increased silting of oyster beds. Over-harvesting of the oysters for trade in pearls may have also contributed to their demise. Hawaiian legend says Kānekua'ana had been angered by mistreatment of an old widow to whom she was related, and so took most of the pipi back to Tahiti.



Drawing by Robert Dampier, from Bishop Museum Archives #SP 99359

After King Kamehameha I learned of foreigners' interest in pearls, he reserved all oyster harvesting and pearl trading to himself, with severe punishment for breaking the kapu. This 1825 drawing (a date before the pearl trade ended, but in the reign of King Kamehameha III) shows a western vessel and Hawaiian canoes in Pearl Harbor, possibly trading other bounty of the harbor and surrounding land.

Except for isolated specimens of a larger species, the oysters and the pearls found in the harbor were typically small, but formerly plentiful. In the pre-western contact period, the oysters were valued less for pearls and more for food and for the mother-of-pearl shell lining. The hard, layered, iridescent shell lining could be carved into functional items, such as fish hooks or scrapers, and used as eyes in sacred statues.

PEARL LEI:

An 1894 newspaper article, by Mose (or Moses) Manu, noted that lei (necklaces) made of the harbor's pearls were prized ornaments of chiefs, and variations "included those with a fine yellowish tint, others had bumps like diamonds, and some were bluish-yellow." However, no such lei, made with Pearl Harbor pearls, is known to have survived.



Many Periods of Building

Seth Ford, Jr. sold the island to the John I'i Estate in 1891, and it was used by I'i's daughter Irene and her husbands (she married Charles Holloway after Charles Brown) for various crops. They also had a country "camp" of rough but comfortable buildings at this point on the island. After a fresh-water well was drilled nearby in 1899, it not only supplied Irene's camp, but fed a reservoir and allowed leasing most of the island for sugar. Plantation buildings were added near the camp and used until approximately 1917, when the U.S. Government acquired all of Ford Island. The concrete structure, Battery Boyd, which you see across the street, was built in 1917 on a parcel purchased earlier by the U.S. Army; this was one of two fixed battery defenses to protect the Navy fleet from attack by land. Within a few years the guns in the battery were considered obsolete. The Army constructed a few other facilities near this point during the 1920s and redeveloped the area in the 1930s. During World War II the Navy constructed a new set of buildings at this point.



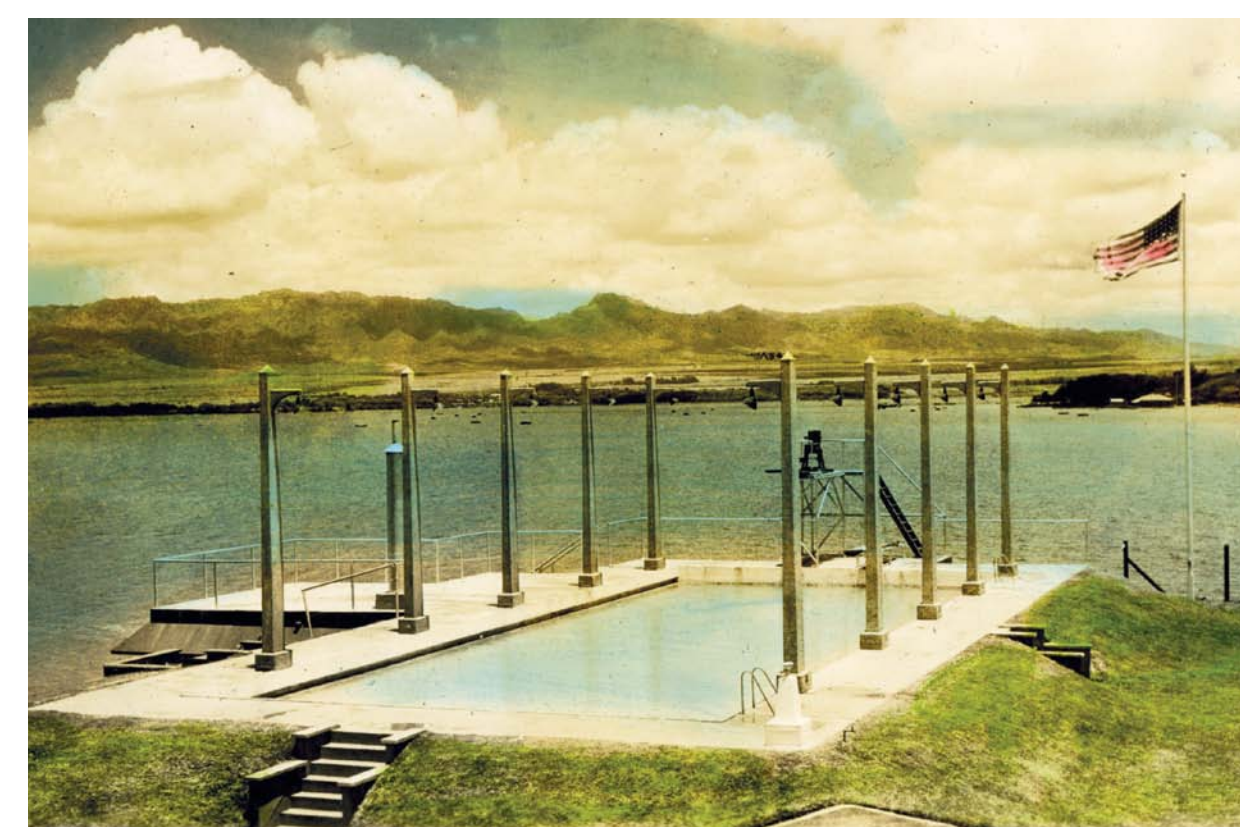
After the Army moved to Hickam Field, the Navy added fill land near this point and redeveloped it in 1941 as a carrier support area with fewer, but larger buildings. The camouflage paint scheme was added in 1942. The only Army-era structures in this photo are the smaller hangars, pool, boathouse, and Battery Boyd (under the trees on right).

U.S. Navy, from National Archives II #71 CA-152A-23



U.S. Navy, from National Archives II #80-G-451154

By 1936 the Army had a dense cluster of buildings around the arched road at this point. The numerous small huts, closely spaced, were a step up from the earlier enlisted housing in tents.



From Hawai'i Aviation Preservation Society and Kalani Ogata

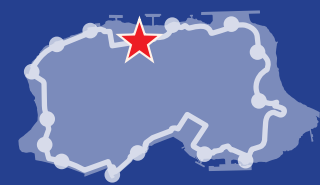
This Army pool was retained by the Navy until the 1950s. It was used by both services for training exercises as well as recreation. The columns held lights for night-time use of the pool.



From Hawai'i Aviation Preservation Society and Kalani Ogata

This boathouse was at the location of the rebuilt piers that you see from where you are standing.

This point on the island is labeled Kanekawa on 19th- and early 20th-century maps, but the meaning of the Hawaiian place name has been lost during the last century.



Makahiki—A Period of Peace and Feasting

Makahiki was an annual harvest festival with complex rituals, extending over a four-month period, which started with the rising of the Makali'i (the stars westerners call the Seven Sisters or Pleiades). During this rainy season, there was rest from typical labors of planting, fishing, or other means of livelihood.

It was also a period of thanksgiving when offerings were made to Lono (one of the four great Hawaiian gods) and collected by the representatives of the ali'i (chiefs). Such tributes, or ho'okupu, could include animals, crops, prepared foods, articles of attire, and other finely crafted items — utilitarian ones, such as fishnets or mats,

as well as those for adornment, made from feathers, ivory, or pearls. In addition to prescribed ceremonies there was feasting, dancing, and storytelling. Makahiki was a time of peace and rest from work, but was also associated with games and sports that celebrated strength, endurance and skill.



Types of ho'okupu that might be offered at Makahiki.

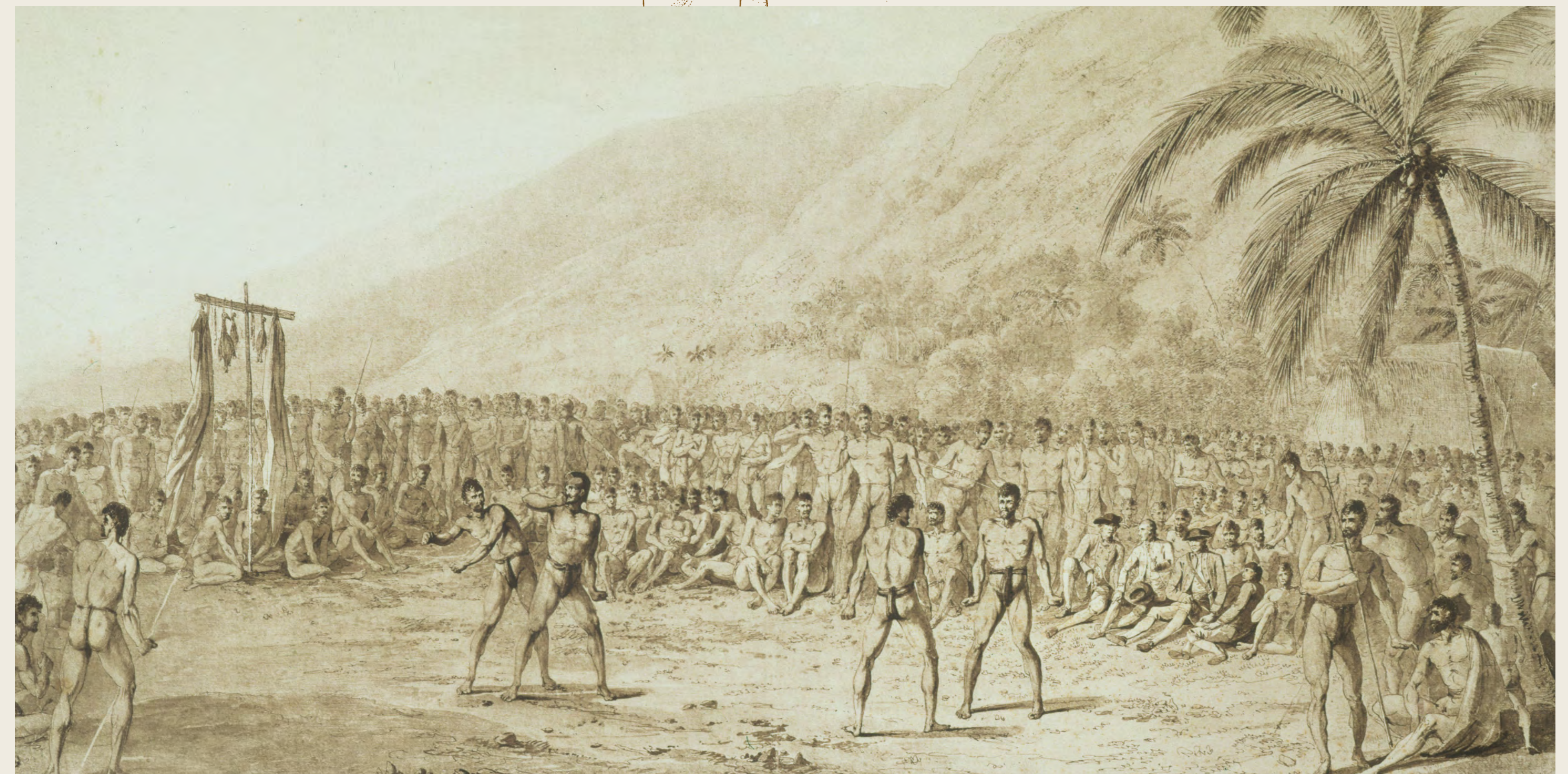
- A) A bundle of kapa (inner bark of the paper mulberry tree that is pounded into cloth and decorated)
- B) A basket of fish
- C) An 'umeke (bowl or calabash) containing 'uala (sweet potatoes)
- D) Food wrapped in ti leaves

Illustration: © Kamehameha Schools/Bernice Pauahi Bishop Estate from Makahiki 1990, Robin Y. Burningham, illustrator



Lithograph based on drawing by Louis Choris, from Bishop Museum Archives #SXC 101778

The title of this image, translated from French, is "Dance of the Sandwich Island men." Based on a drawing made about 1817 by a Ukrainian artist, Louis Choris, this could depict a Makahiki celebration, since the Russian ship, headed by Captain Otto von Kotzebue, was in the islands during that period on its first extended stay. In the text published with Choris' images, the dancing was described as harmonious and presented with an infinite grace. Some hula (both the dances and the chants), especially those with themes of rain and fertility, were only presented during Makahiki.



Photogravure of drawing by John Webber, from Bishop Museum Archives #SP 114297

Boxing was a traditional sport in the Makahiki period. The match between two pairs of boxers, shown in this drawing by John Webber, represents an event in 1779 conducted before a large assembly of Hawaiians, plus Captain James Cook and his officers. Cook's ships had auspiciously timed their arrival at Kealakekua with the Makahiki. The ceremonial object drawn on the left side, with ritual items draped from the cross pole, represented the akua pā'ani, or "god of sports."



Navy Carrier Support Area in World War II

The aircraft carrier support area of Ford Island is important because of its association with the transition of Navy aviation from seaplanes to carrier-based planes. Naval aviation's role also expanded from a patrol emphasis to become the Navy's main combat arm during World War II. This complex of support buildings was continually repairing aircraft to allow rotation of a carrier's planes. The carriers could make quick turn-arounds, with planes in top readiness for

the critical air battles in the Pacific, which contributed greatly to the final victory in WWII.

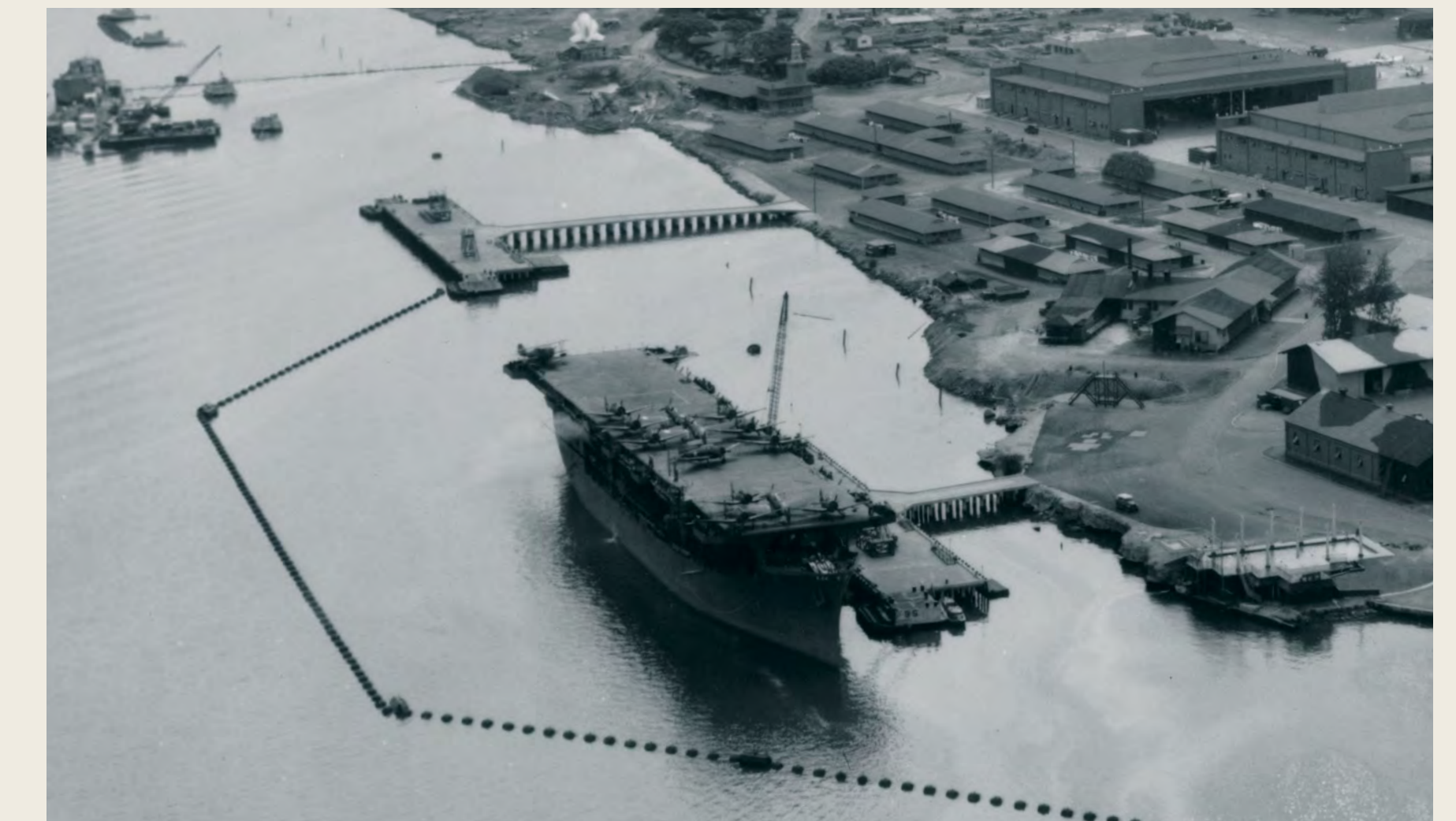
Usually only one carrier was in port at Pearl Harbor, at least during the first years of WWII. One reason was to minimize the number of these critical vessels that could be attacked in port. Second, with so few carriers, each could only be spared the minimum time for necessary repairs, rotation of planes, and upgrades to the planes and ship. Third, one carrier brought in a large number of planes, which filled the repair hangars in the carrier support complex to capacity.

Photo taken in November 1941 at completion of Facility 176, one of the two new Navy hangars for carrier planes. This photo was taken on November 5, 1941, about a month before the Japanese attack. Luckily, no planes were parked near these hangars on December 7, 1941, since the carriers were at sea. So this group of buildings was not the target of the enemy planes.



Joe Genne photo, from Pacific Aviation Museum Genne Album #041

This Carrier Aircraft Support Unit (CASU) crew worked on repairing carrier planes inside one of the large Navy hangars. This hangar was designed by Albert Kahn, an architect famous for his industrial building designs.



U.S. Navy, Bureau of Aeronautics, from National Archives II #71 CB-100D-5

The USS *Long Island* was the U.S. Navy's first escort carrier, a type also called "baby flattops." These were initially cargo ships converted to aircraft carrier use, allowing a rapid expansion of the carrier force during the approximately three-year construction period for new full-size carriers.



Joe Genne, Pacific Aviation Museum Genne Album #112

Cranes held planes up for a "drop check" to make sure wheel-lowering mechanisms worked.



U.S. Navy, Bureau of Aeronautics, from National Archives II #71 CA-153D-2



Hale Pili — Grass Houses

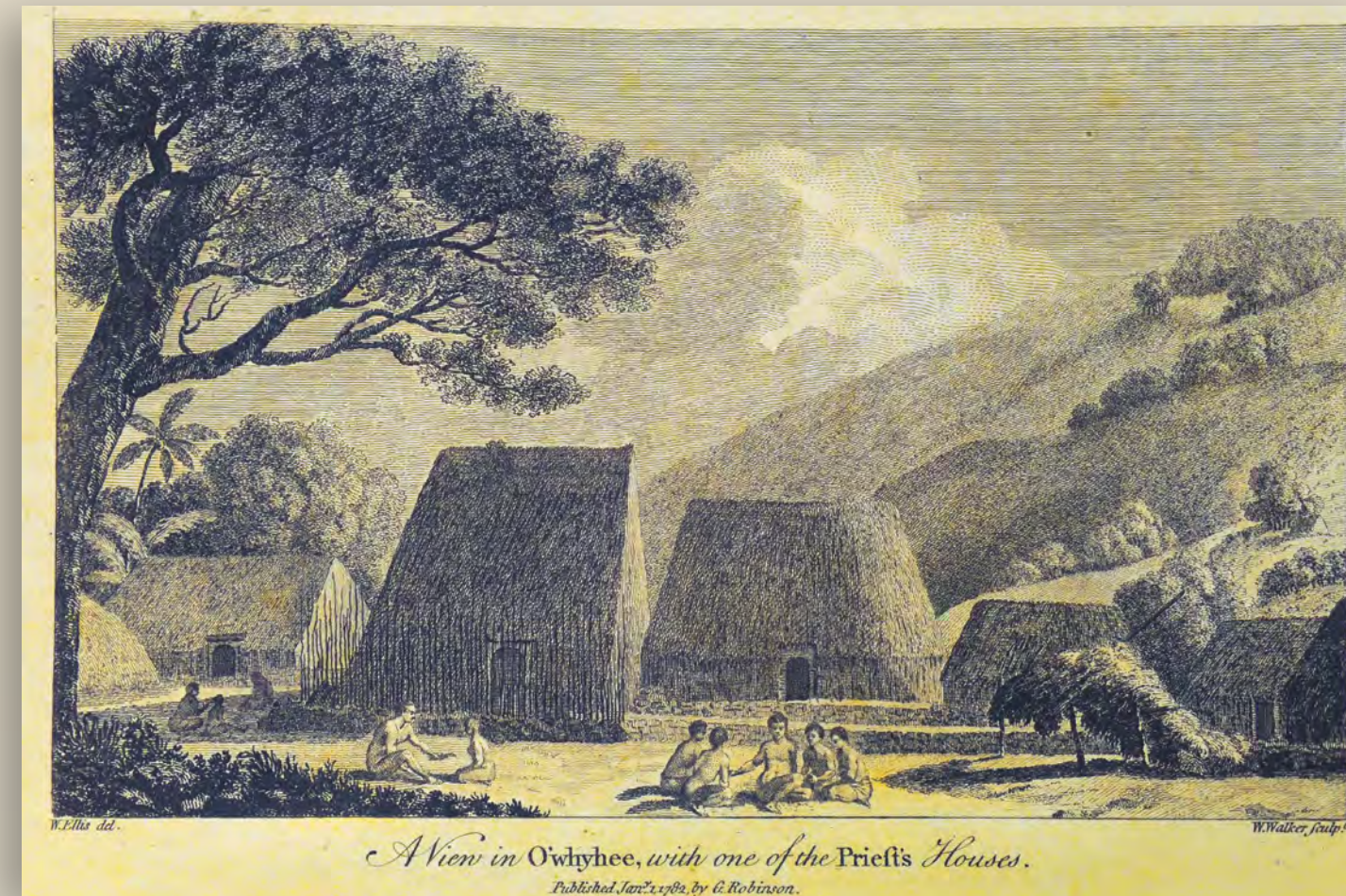
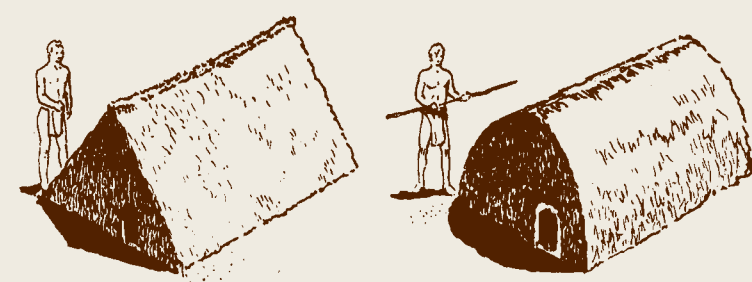
Moku'ume'ume (now called Ford Island) was not known to have been used for permanent habitation before western contact, due to the lack of surface water. However, pili (a type of grass) grew here, the main material for thatching the roofs and exterior walls of Hawaiian houses. The pili on the island was considered a blessing to people of the 'Ewa district. The grass was of such quality that an 1899 newspaper article reported the Moku'ume'ume pili was used for thatching the house of a supreme judge. The scientific name for pili is *Heteropogon contortus*. Other materials were used for thatching but pili was preferred for its ease of harvest and application, pleasant odor and color, and length of service life.

Hawaiian houses have simple exterior shapes but intricate lashings of wood members and pili bundles done with precise twists and knots.

The hale of the Hawaiian chiefs were larger than the commoners' huts, for both use and status reasons. Ali'i conducted more of their activities inside their hale complexes, while the maka'ainana used their houses simply for sleeping, storage and shelter (from the weather or during kapu periods). The roof rafters could

be curved or straight, on both the small or large hale, but on the small houses the roof started at ground level, rather than being raised higher by walls.

The higher the ridge pole of the hale, the higher the rank of the occupant.



Engraving based on drawing by William Ellis, from Bishop Museum Archives # Q 205524

Surgeon William Ellis was in the crew of Captain Cook's ships which were the first western vessels to reach the Hawaiian islands. His 1778 drawing of a grouping of grass-thatched houses was the basis for numerous engravings which illustrated accounts of early Pacific voyages. The label "priest's houses" indicate this complex of large structures was for a high-ranking kahuna (the Hawaiian word for priest).

Hale pili in the islands evolved after western contact, and increasingly incorporated non-native design elements, such as hinged doors, and spatial features, such as the porch, or lanai as it is termed in Hawai'i.

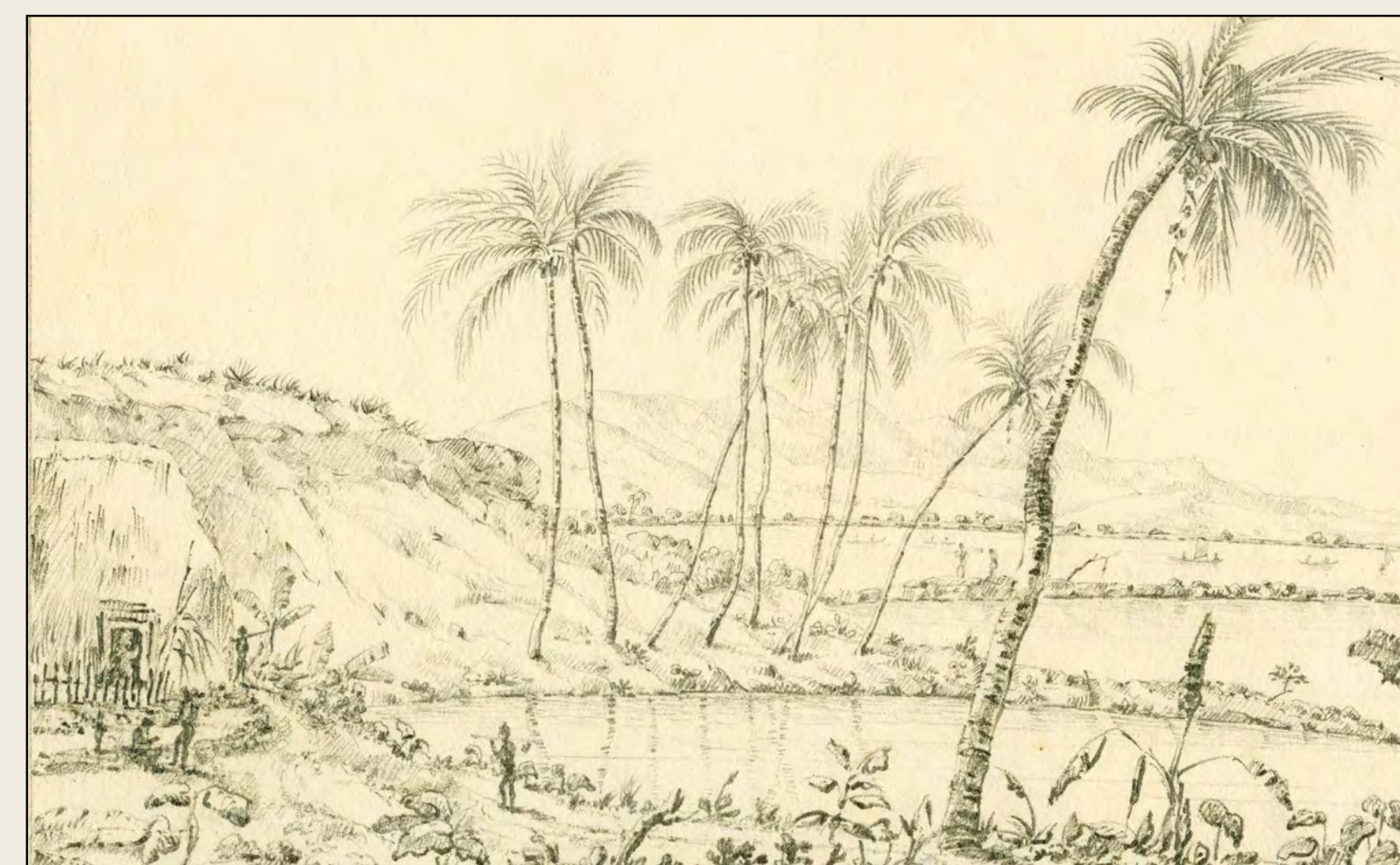
Russell A. Apple The Hawaiian Thatched House, National Park Service: San Francisco



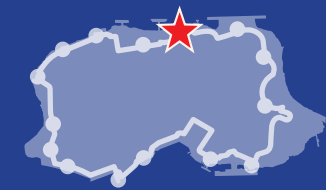
Photo by J.A. Gonsalves, from Bishop Museum Archives #SP 201238

ABOVE: This house, photographed in the late 1800s or early 1900s, uses both traditional materials, the pili grass thatching, and post-contact elements, such as the paneled door. The open-sided roofed area in the rear also shows the influence of western-style buildings.

LEFT: This drawing made in 1825 by a visiting English artist depicts an idyllic setting for a house near the shore of Pearl Harbor, adjacent to several fishponds.



Drawing by Robert Dampier, from Bishop Museum Archives #SP 95665



Luke Field Officer Housing

About 1922 the Army built a row of officer housing with a view of the harbor's waters across a curving road along the original shoreline. Of the original 30 Craftsman-style dwellings, 15 remain, five of which are duplexes. After the Army's last Luke Field operations moved to Hickam Field in 1939, these quarters were used for Navy aviation officers. During the December 7, 1941 attack this neighborhood witnessed some of the destruction, although the Japanese planes were concentrating on battleships and planes in other areas of the island. Just offshore from these houses the USS *Detroit* and USS *Tangier* had no significant damage, but the USS *Raleigh* nearly capsized and the USS *Utah* was sunk, with 58 men trapped inside. You can visit the nearby USS *Utah* Memorial.

This 1923 photo shows newly constructed houses for Army officers, built from standardized designs. They are similar to housing at Fort Kamehameha and Schofield Barracks, but these Luke Field houses are slightly smaller and with simpler detailing than the quarters built at the other two Army posts.



U.S. Army Signal Corps #10095, courtesy U.S. Air Force, 15th Wing History Office #1184



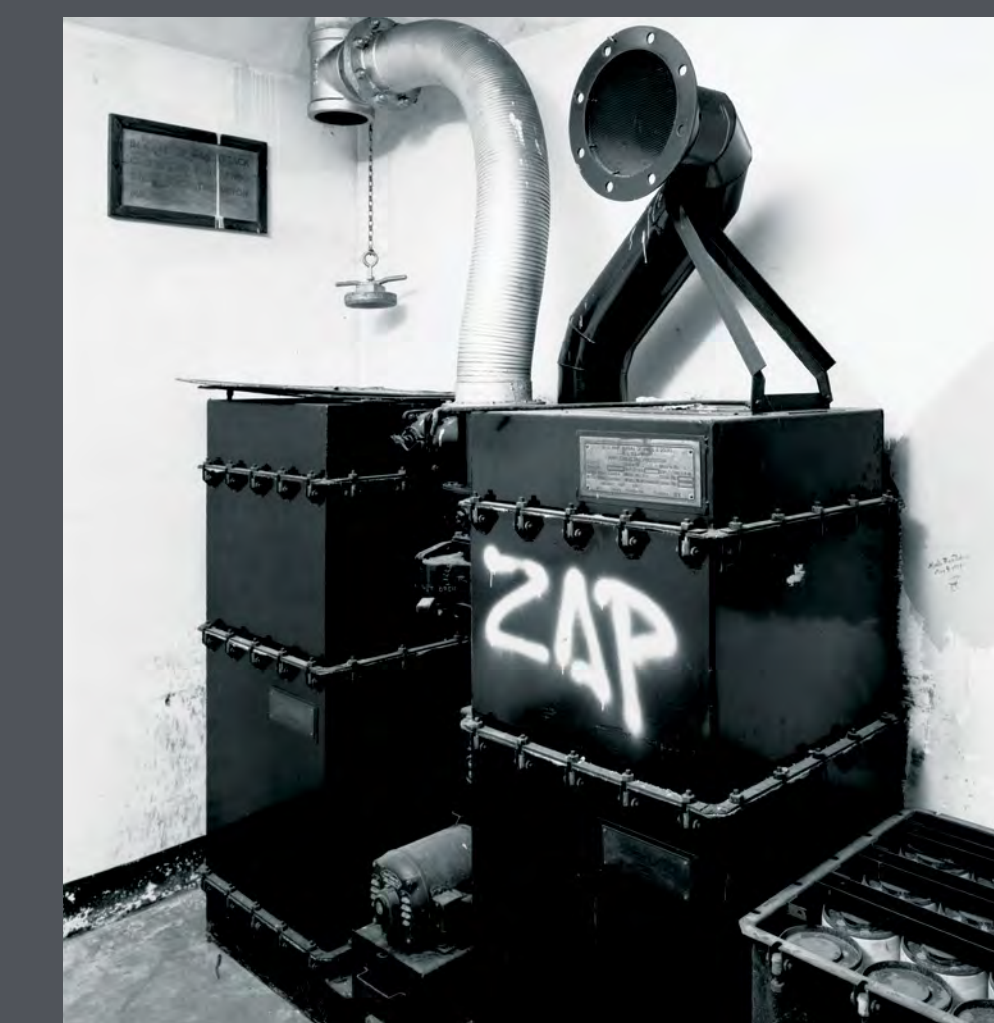
U.S. Navy, from National Archives II #71 CA-152A-43

Note the growth of the trees and the planting of curbside hedges in the 13 years between the 1923 street-level photo and this 1936 aerial. The smaller houses, and two of the larger ones on the right side of this photo were demolished in 1941 to build one of the large Navy hangars (Facility 175) and the relocated roadway. The houses were close to the shoreline until the placement of dredging fill in the 1940s.



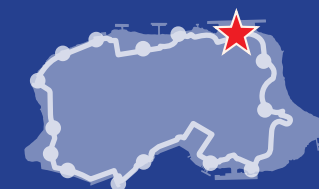
U.S. Navy, from National Archives II #71 CB-102F-1

This bombproof shelter was built in 1942 in anticipation of another attack by the Japanese. The camouflage net on the six-foot thick concrete roof covered an anti-aircraft gun position. Within the windowless four-foot thick walls of the bottom level are air filters and decontamination rooms that were designed to protect against a gas attack.



Franzen Photography, HABS No. HI-329-23

Air filter equipment in one corner of the 1942 bombproof shelter. This was called a "Collective Protector" and the cylindrical air filters are visible in the extra filter box on the right.



'AUMAKUA

Certain sharks could be 'aumakua, or a guardian spirit, to specific Hawaiian families, and considered a reincarnated relative. Offerings of food were made to them by the designated keeper in the family, or kahu. In turn the shark would assist the kahu, perhaps chasing fish into nets, or as a messenger of danger.

RIDING SHARKS

Mary Kawena Pukui reported in 1943: "Sharks, though numerous, were not harmful anywhere within the Pearl lochs, [so] the natives used to have fun mounting their backs and riding them as cowboys ride horses.... Is this a tall fish story...? No, it is not."

Sharks as Guardians

KA'AHUPAHAU-PROTECTOR SHARK

There are many versions of the story of Ka'ahupahau, the chiefs of sharks in the Pearl lochs. One account explains she was a still-born human baby, whose mother

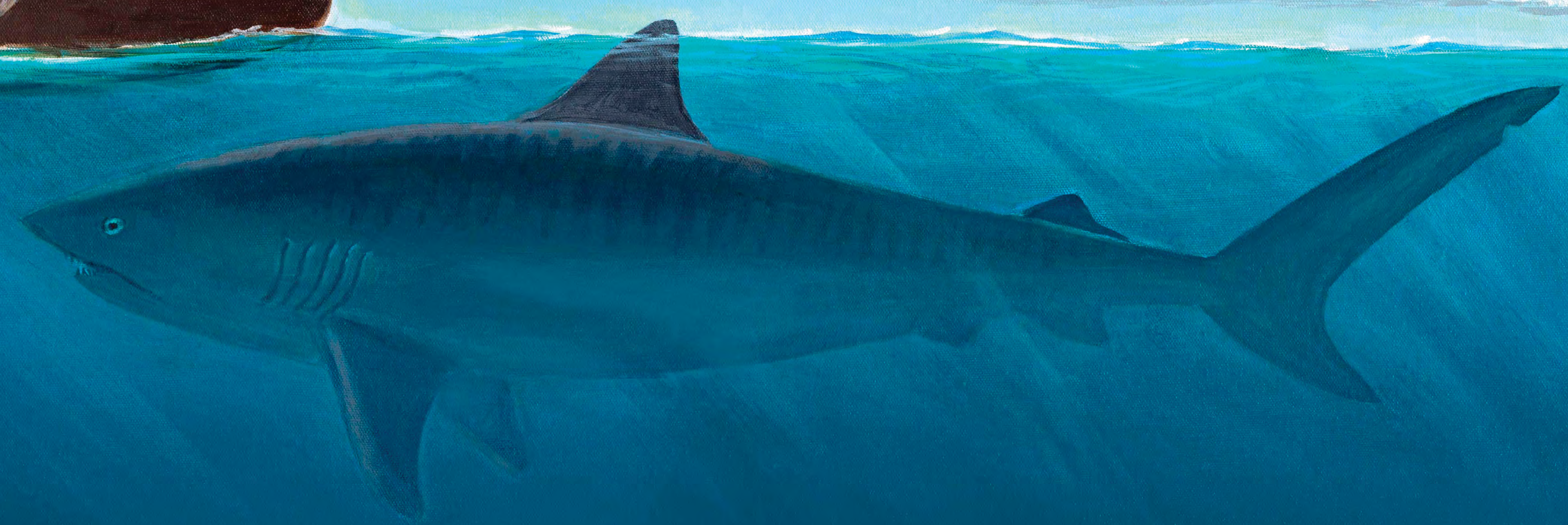


©Caren Loebel-Fried, from Hawaiian Legends of the Guardian Spirits, UH Press

In Hawaiian legend and practice the lives and spirits of sharks and humans were intertwined. Some sharks were revered in a large geographic area, such as Ka'ahupahau was by all in the 'Ewa District.

delivered her while gathering limu (seaweed) and shellfish on the shoreline of Manana (now called Pearl City Peninsula). The presumed dead baby, however, was converted to a shark, who frequented the same shoreline that was her mother's favorite gathering spot. A kahuna (priest) called the shark Ka'ahupahau and explained its relationship to the mother, who then built an ahu, or altar, to her lost daughter.

All the people living around the harbor considered Ka'ahupahau a good shark who protected them and gave warnings when bad sharks were nearby. There are also many tales of Ka'ahupahau's brother, a shark called Kahi'uka (whose name means "smiting tail") and of her son, a shark called Kupi'ipi, whose home was on the site of Drydock #1 in the Pearl Harbor Shipyard.



© 2011 Herb Kawainui Kane, from www. HawaiianEyes.com



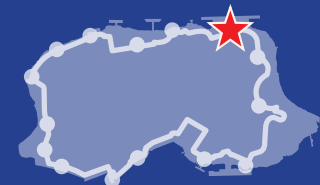
Isobel F. Strong, Bishop Museum Archives #SP 205513

The Hawaiian name for hammerhead shark is manō kihikihi. Adult females enter shallow bays, such as Pearl Harbor, in early April to give birth. Typical litters are 15-30 pups, each about a foot long. The females return immediately to deeper water, but the pups stay in the shallows until they grow larger.



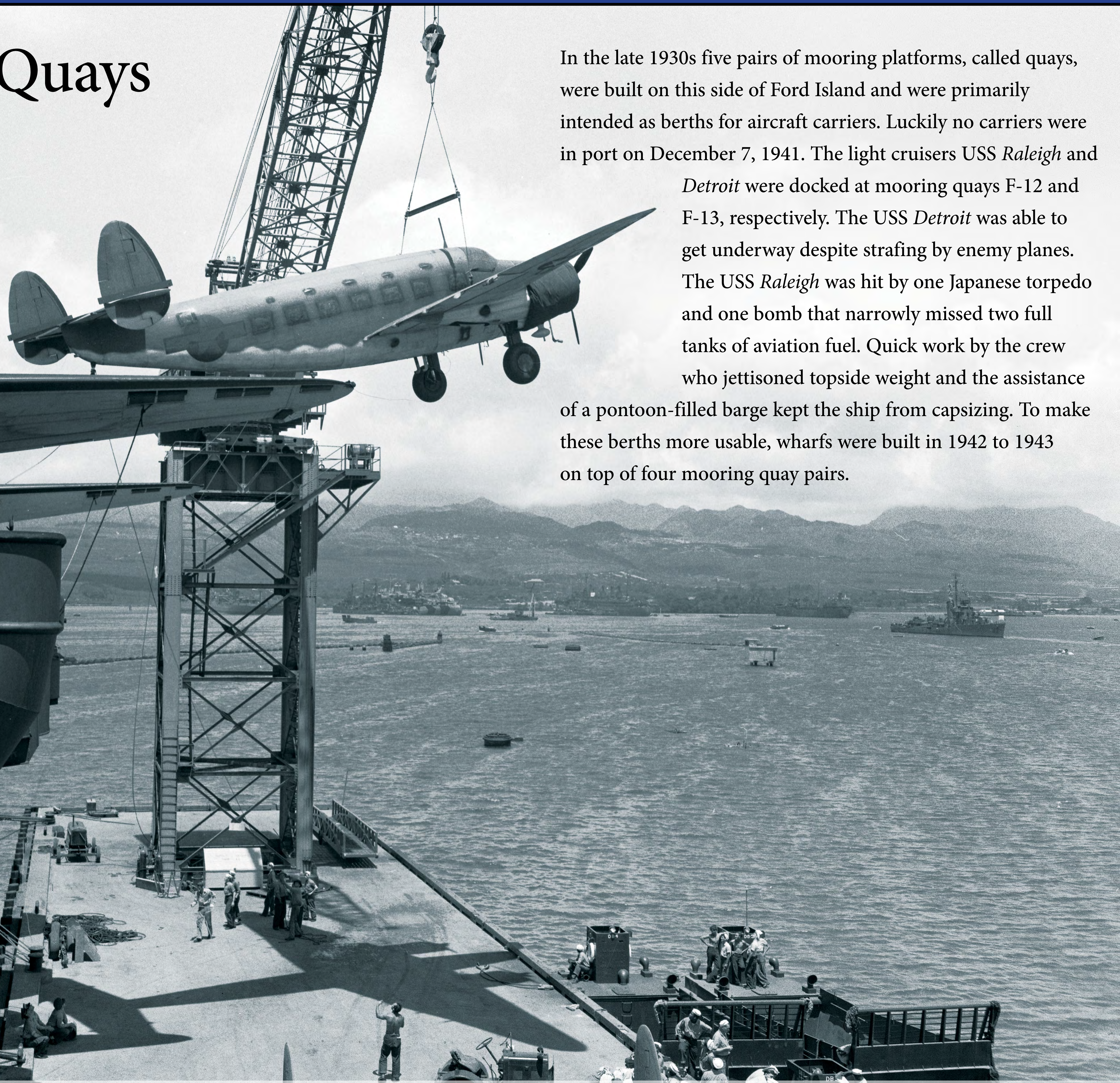
John E. Randall

We no longer know all the names for different shark species that were used by ancient Hawaiians, but manō pā'ele probably referred to the blacktip reef shark. The modern scientific name is *Carcharhinus melanopterus*.



Moorings Quays to Wharfs

This April 1944 photo show planes being unloaded from an aircraft carrier with the help of a fixed crane at Wharf F-13.



In the late 1930s five pairs of mooring platforms, called quays, were built on this side of Ford Island and were primarily intended as berths for aircraft carriers. Luckily no carriers were in port on December 7, 1941. The light cruisers USS *Raleigh* and *Detroit* were docked at mooring quays F-12 and F-13, respectively. The USS *Detroit* was able to get underway despite strafing by enemy planes. The USS *Raleigh* was hit by one Japanese torpedo and one bomb that narrowly missed two full tanks of aviation fuel. Quick work by the crew who jettisoned topside weight and the assistance of a pontoon-filled barge kept the ship from capsizing. To make these berths more usable, wharfs were built in 1942 to 1943 on top of four mooring quay pairs.

U.S. Navy, from National Archives II, #80-G-263379



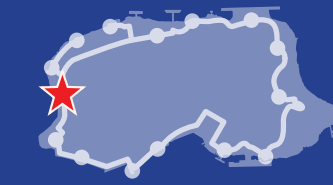
U.S. Navy, from National Archives II, #80-G-279385

This November 1941 photo shows the USS *Lexington* aircraft carrier and two other ships docked at three moorings quays on the northwest side of Ford Island. The five pairs of quays were numbered as Berths F-9 through F-13.



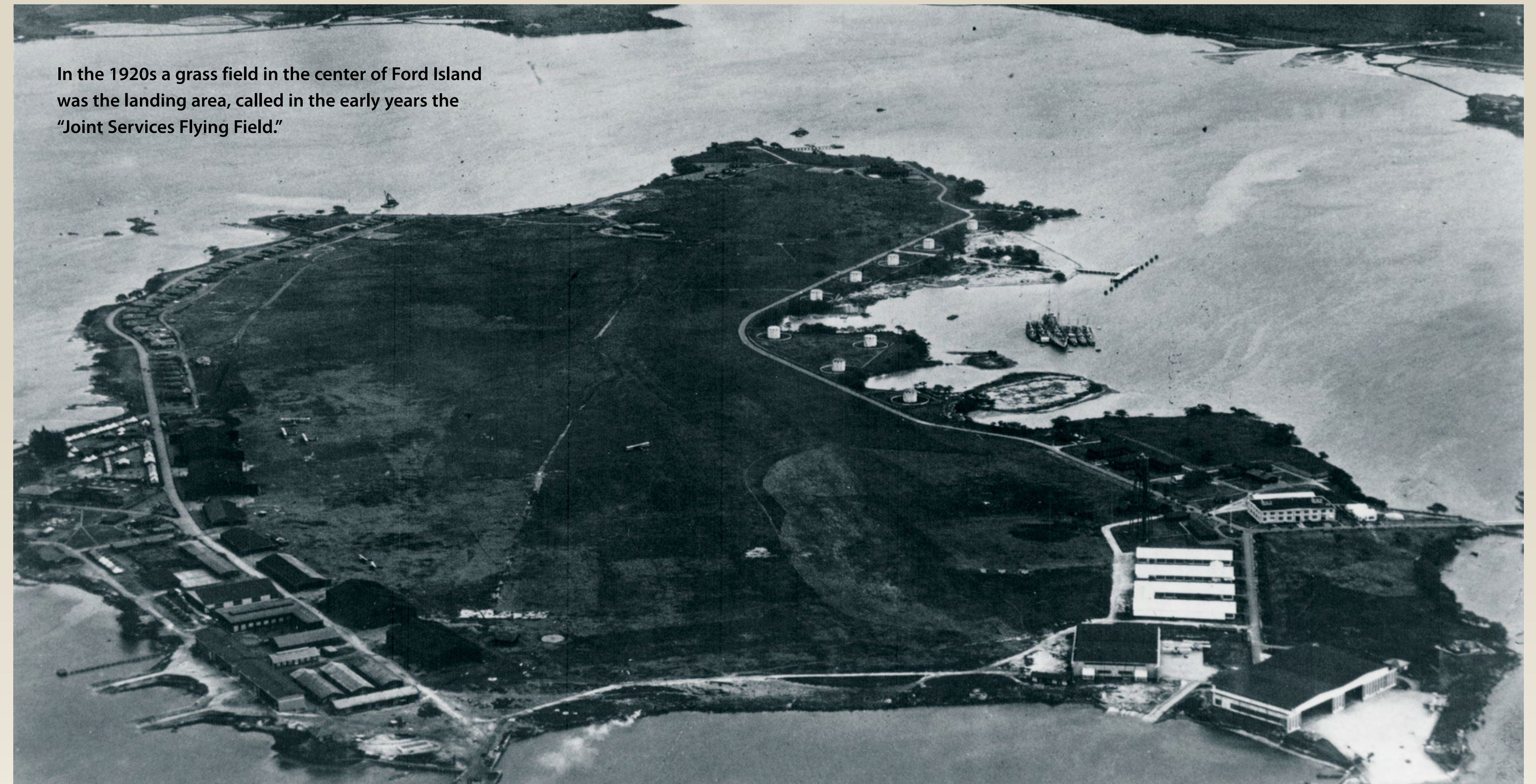
U.S. Navy, from Hawaii State Archives, #PP FUR 2-1,015

By December 1943 four wharfs had been constructed; three have a central perpendicular leg to connect them to the island, but a wide causeway of fill extended the land to wharf F-13. The capsized USS *Utah* is visible at Berth F-11. By October 1944 work had started to join wharfs F-12 and F-13, with completion in early 1945. Many years later this combined wharf was renamed Facility S382.



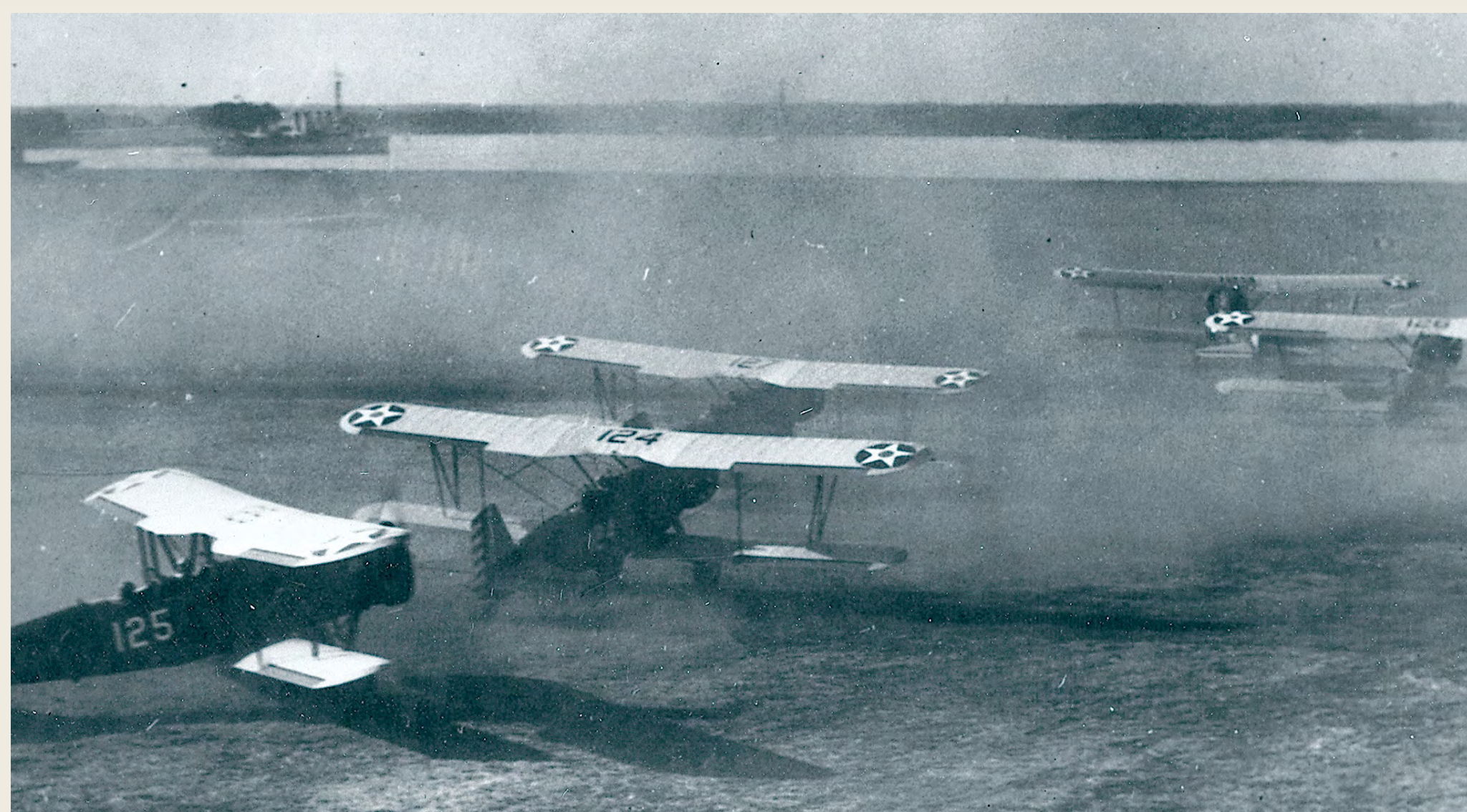
Center of the Island

The Army and Navy shared the central landing area at Ford Island until 1939. Aerial photos show there was no paved runway in the 1920s and early 1930s; the landplanes of that early era landed on the open grassy field. Most early military maps of the island note the joint use of the landing field; however, until the early 1930s the Navy mostly had seaplanes, using seaplane ramps. Although the Army had some seaplanes and two seaplane ramps, landplanes were their primary equipment by the mid 1920s. In 1936 a runway and taxiways were built, connected only to the hangars on Army side of the island. Paving for the landing mat, warming up platforms and plane parking areas expanded during World War II to cover most of the island's center.



In the 1920s a grass field in the center of Ford Island was the landing area, called in the early years the "Joint Services Flying Field."

U.S. Navy, #20 in Naval Air Station Ford Island binder



Courtesy U.S. Air Force, from 15th Wing History Office #1197

These Thomas-Morse O-19 aircraft were stationed at Luke Field in the late 1920s and early 1930s. The dust that this type and later heavier planes kicked up from the 'grass' field was endured until the runway was paved in 1936.



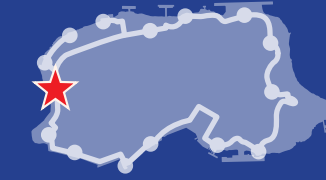
U.S. Navy, Bureau of Yards & Docks, from National Archives II #71 CA-152A-14

In October 1939 the Army activities on Ford Island were in the process of moving to Hickam Field. The Navy's air operations were still mostly centered around the seaplane hangars and ramps in the southeast corner of the island, although carrier planes were increasingly part of the mission.



U.S. Navy, from National Archives II #80-G-276867

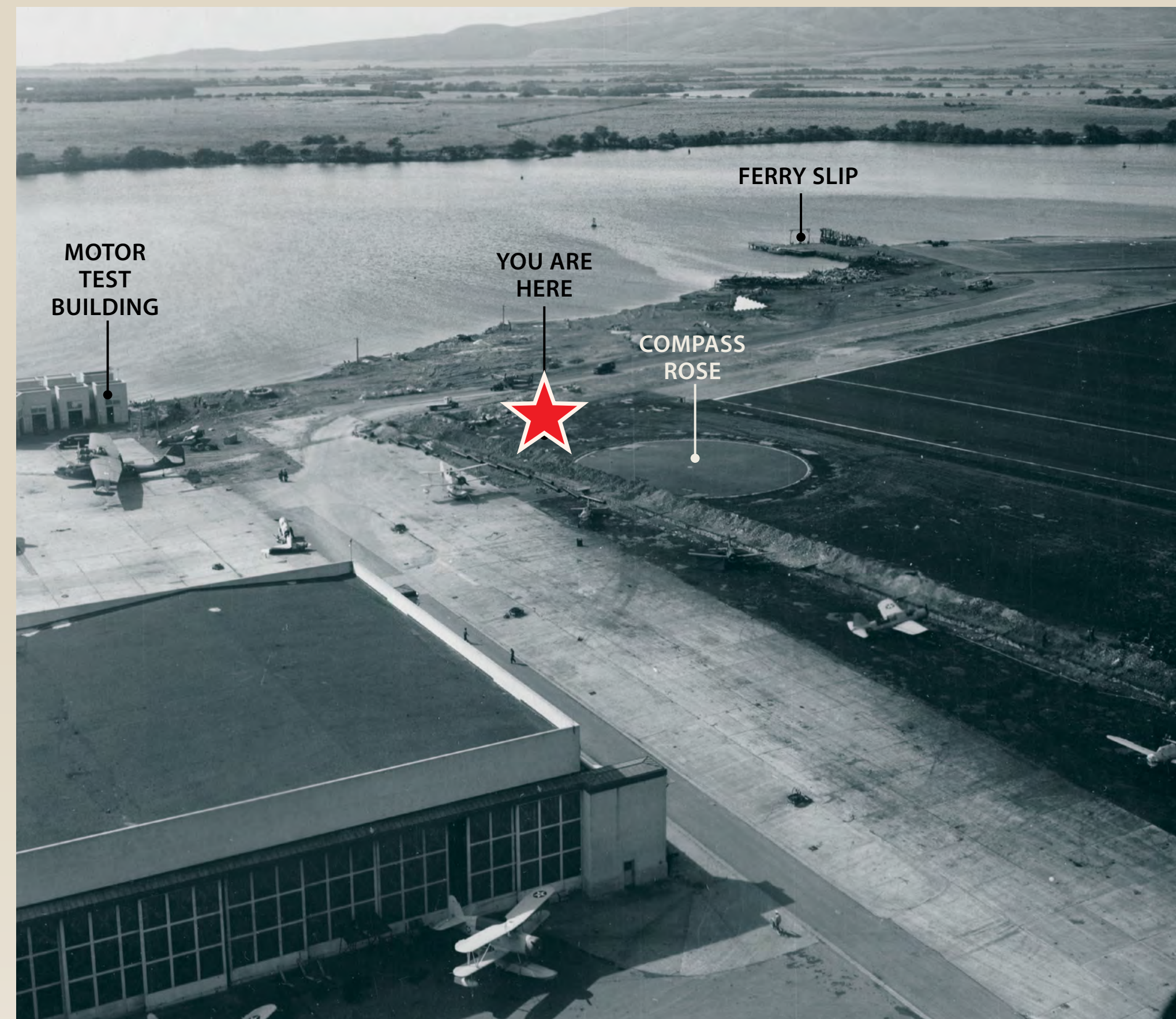
By 1944 all of the Army buildings in the southwest corner of Ford Island had been replaced by paving for seaplane ramps and parking areas. Note camouflage paint on runway.



Seen From Here

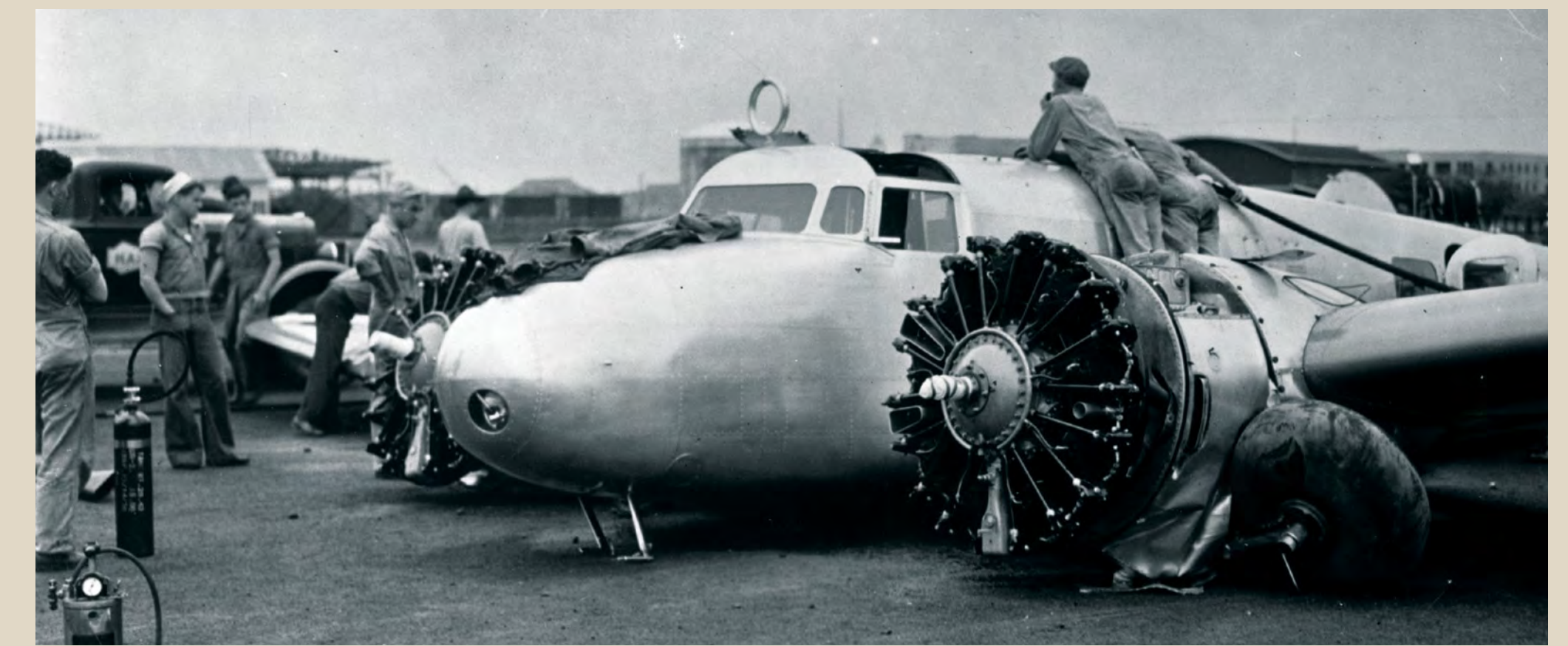
This spot provides dramatic views down the channel towards the ocean and up the former runway axis to the Kōʻolau mountains. This sense of connection uplands and shore (mauka-makai) is an important concept of the Hawaiian land division called ahupuaʻa. The views from this place also offer links between past and present. For instance, the small motor test building seen on the left of this 1941 photo has been replaced, at the end of World War II, by the large engine test structure (Facility 284) that you see today.

Kaimaʻemaʻe Beach is the name (as indicated on an 1897 map by the USS *Bennington* officers) for the southwest shore of the island. *Place Names of Hawaii* translates it as “clean sea.” That shoreline has been modified by construction of sea-plane ramps and by landfill.



U.S. Navy, from National Archives II #80-G-32506

The compass rose that you are standing near was the first one on the Navy side of Ford Island, built about 1939. The radial lines align to the compass points and were used to calibrate the compasses installed in the Navy's planes. History of the ferry slip seen on the right side of the photo is provided on a panel near that point.



U.S. Army Museum Hawai'i #526

Famous female aviator Amelia Earhart had flown twice across the Pacific, first from Hawai'i in 1935 and to Hawai'i in 1937. On take-off for the second leg of her planned round-the-world flight, her Lockheed Electra 10 plane did a ground loop on this airfield in March 1937, due to a tire blowout. Repairs were required on the mainland, so her trip restarted in Florida on June 1, 1937, flying east instead of west.



Looking northwest from the compass rose, at the camouflaged revetments and operations tower in November 1942.

U.S. Navy, Bureau of Yards & Docks, from National Archives II #71 CB-102Y-3