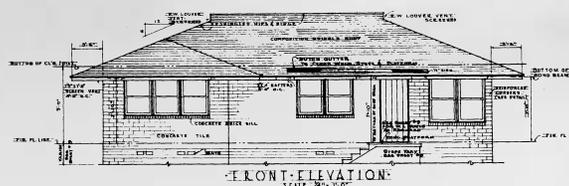


Historic Context Study of Historic Military Family Housing in Hawaii



August 2003

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Prepared for:

**Commander, Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, Hawaii**

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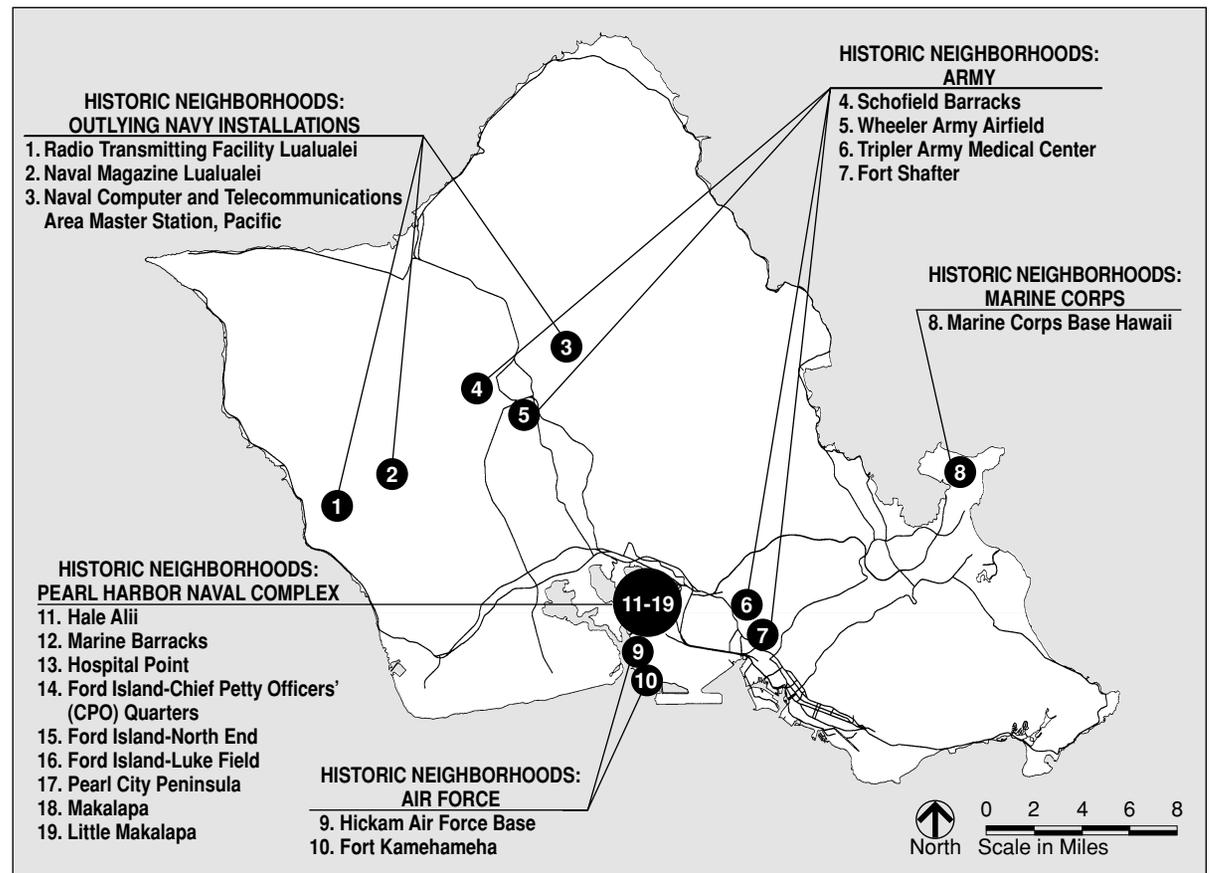
Chapter 1

Introduction

This report on the historic context of Department of Defense historic housing in Hawaii was produced with funding from the Department of Defense Legacy Resource Management Program, through the U.S. Navy, Pacific Division Naval Facilities Engineering Command. A companion manual covers recommended procedures for repair and maintenance of this housing.

All historic housing at Army, Air Force, Navy, and Marine Corps installations in Hawaii are located on the island of Oahu. Historic neighborhoods described in this document were selected by Pacific Division Naval Facilities Engineering Command. These neighborhoods include 928 residential buildings containing many more units, since there are numerous duplex and multi-unit family housing facilities. Landscape features are also addressed, but non-residential buildings (such as carports) have not been included in the report.

A brief overview history of military housing in Hawaii is presented in Chapter 2. Army and Navy housing developments in Hawaii are summarized and contrasted, with some references to national trends in military housing. Air Force and Marine Corps housing was built originally by the Army and



Historic military housing neighborhoods

HISTORIC CONTEXT STUDY
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Navy, respectively. The history of ownership changes between military branches in Hawaii is included in this chapter.

Chapters 3 through 7 are organized first by branch of service, and then by installation or neighborhood. A statement of significance, a history, and a landscape features description are provided for each installation or neighborhood. For each neighborhood, houses are grouped by design. A design may be a unique house or may include several types of houses that have different floor plans but are otherwise similar in materials and details. Exterior and interior character-defining features, as well as detracting elements, are listed for each design group. Floor plan(s) plus photographs, including historic photographs, illustrate each house type.

1-2

DOD Historic Housing Neighborhood	No. of Buildings
Army Installation	
Fort Shafter	34
Schofield Barracks	143
Wheeler Army Airfield	148
Tripler Army Medical Center	2
Air Force Neighborhoods	
Hickam Air Force Base	330
Fort Kamehameha	34
Pearl Harbor Naval Complex	
Hale Alii	13
Marine Barracks	4
Hospital Point and Radio Station	13
Ford Island: Luke Field	15
Ford Island: North End	20
Ford Island: CPO Quarters	6
Makalapa	91
Little Makalapa	15
Pearl City	6
Outlying Navy Installations	
Naval Magazine Lualualei	14
Radio Transmitting Facility Lualualei	10
Naval Computer and Telecommunications Area Master Station, Pacific	3
Marines	
Marine Corps Base Hawaii	27
TOTAL HISTORIC RESIDENTIAL BUILDINGS IN THIS STUDY	928

Chapter 2

Overview of Historic Military Housing in Hawaii

Early U.S. Military History in Hawaii

In the 1840s, the first sugar mill was established in Hawaii, and sugar became increasingly important as the main money crop and export item of the Kingdom of Hawaii. U.S. military and commercial interest in the Hawaiian Islands increased as the Pacific area gained importance in world politics and trade. In early 1873, Major General John M. Schofield visited Oahu to inspect its defensive capabilities. Upon his return to the mainland, he and his subordinate, Lieutenant Colonel Burton S. Alexander, reported to the Secretary of War that Pearl Harbor was the only harbor large and deep enough to serve as a refuge for a fleet of war vessels. They noted that the coral bar at its mouth would require removal before Pearl Harbor could serve this purpose, Schofield and Alexander recommended that the United States obtain a cession of Pearl Harbor. They suggested that this might be deeded free of cost in return for a reciprocity treaty that would allow Hawaiian sugar to enter the U.S. duty free. Apparently, this report made a great impression upon many leaders in Washington, D.C. The idea



*Schematic map of Pearl Harbor in late nineteenth and early twentieth centuries.
Source: Bishop Museum*

of cession of Pearl Harbor was not popular with the Hawaiian legislature, although it was advocated by the kingdom's sugar planters. A reciprocity treaty was concluded in 1875 without any mention of Pearl Harbor as a U.S. Naval installation. (The U.S. Navy had established a coaling station in Honolulu Harbor.) This treaty was to run seven years and could subsequently be terminated by either party with one year's notice. After 1883, American sugar interests frequently petitioned the U.S. Senate to terminate the treaty. Hawaii's sugar planters were eager for a long-term treaty extension.

In the bargaining for a seven-year treaty extension, the U.S. asked for more concessions. The U.S. Senate proposed in 1886 that King Kalakaua grant the U.S. exclusive right to enter Pearl Harbor and to establish and maintain there a coaling and repair station, including improvements to the harbor entrance (Tate 1968: 184). This issue was debated in Hawaii and abroad for over a year, as it was tied to concepts of national sovereignty and international trade. Convinced that this grant would essentially be a lease and not a cession of land and authority, King Kalakaua directed his minister in Washington to ratify renewal of the reciprocity treaty, which was accomplished in November 1887. This extension of the reciprocity treaty of 1875 thus officially recognized that the United States possessed sole rights to Pearl Harbor as a port. After the extension, most of the arable land on Oahu was planted in sugar cane, since the treaty made exports and profits easier to accomplish. However, use of and improvements at Pearl Harbor by the U.S. did not occur until several decades later.

In early 1893, Queen Liliuokalani was overthrown and a Provisional Government established. U.S. troops were landed from a ship that was in port at the time. The extent and effect of their involvement in the revolution is still debated. After a petition for annexation to the United States was withdrawn by President Grover Cleveland, the Republic of Hawaii was established in 1894, with Sanford B. Dole as President. In 1897, with President William McKinley in office, the annexation petition was resubmitted. The Hawaiian Islands were annexed by Congressional joint resolution in July 1898, at the end of the four-month Spanish-American War. The war provided the impetus for expanding the U.S. coaling station in Honolulu Harbor.

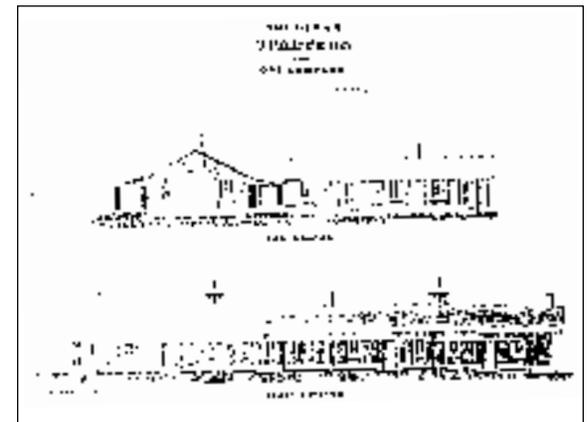
When Theodore Roosevelt became President in 1900, he was determined to upgrade the U.S. military, and the new territory of Hawaii gained attention because of its strategic location. In the early decades of the 20th century the U.S. Navy started developing a major base at Pearl Harbor.

The mission of the Army was to defend Honolulu and Pearl Harbors. Some of the former lands of the kingdom were transferred to the U.S. military for bases, including the two *ahupuaa* (traditional Hawaiian land divisions) now occupied by Fort Shafter and Schofield Barracks. Land was purchased through condemnation proceedings for other early bases, such as Pearl Harbor and Fort Kamehameha.

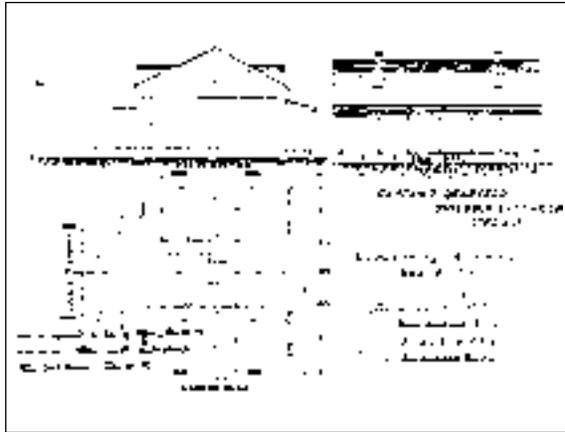
Army Housing History National Army Housing Development

In the early years of the U.S. Army, housing conditions were typically difficult and sparse since funds for quarters and barracks were always limited by Congress. "Housing for families was provided with varying degrees of suitability until minimum standards began to be recognized in the 1860s" (Grashof 1986: 9). The first standard plans for housing officers and non-commissioned officers and their families were developed about 1866.

Strong criticism of Army housing conditions was expressed by Army doctors. This may have spurred Quartermaster General Montgomery Meigs to issue in 1872 a set of standard plans for temporary barracks and quarters in the west. These buildings, constructed at several east coast posts as well, often became quite permanent. Other standardized



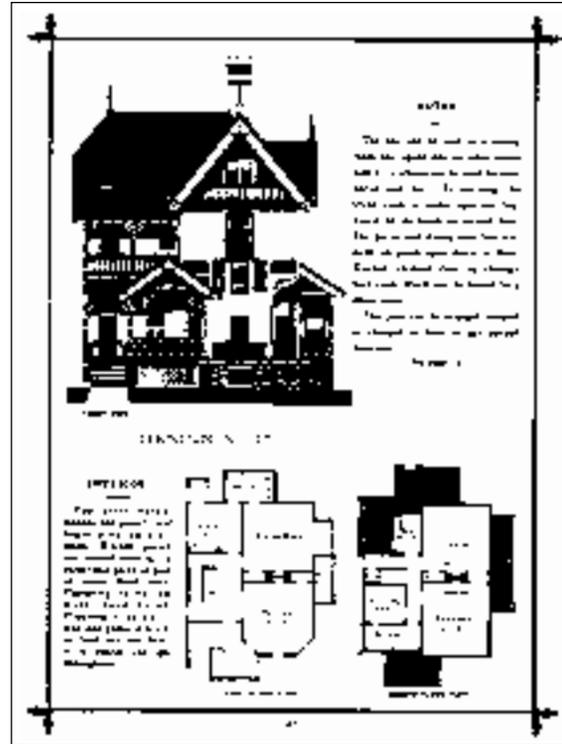
1860 Standard Barracks drawing
Source: *A Study of United States Army Family Housing Standardized Plans (PX-0001-5-0835) Volume 1*



1870 Captain's Quarters Duplex, Ringgold Barracks, Texas
 Source: *A Study of United States Army Family Housing Standardized Plans (PX-0001-5-0835) Volume 1*

plans were developed by regional military departments, but Meigs' plans were the most universal standardized designs at the time. In the civilian sector the idea of standardized housing was popularized by builders' handbooks, style books, pattern books, and mail order catalogs for plans or entire houses (Grashof 1986: 22-23).

Despite attempts to improve housing conditions, the Army continued to be severely criticized for lack of adequate heating, unsanitary conditions, poor ventilation, etc. About 1890, the Army greatly reduced its use of civilian architects and began a serious program of standardized housing and other buildings. The Army was expanding, with a large number of quarters built on both the east coast and out west. Private architectural firms were typically responsible for design of the western posts, but standard Army plans were still often used.



Design from pattern book "Cottage Souvenir No. 2"
 Source: *A Study of United States Army Family Housing Standardized Plans (PX-0001-5-0835) Volume 1*

Because of the Spanish-American War in 1898, the Army more than doubled in size, from about 25,000 troops to over 65,000 (Grashof 1986: 31). In 1905, the Quartermaster office hired an architect and drafting staff to supervise the revision of standard drawings and specifications to improve the appearance of the buildings and to help decrease costs. Reductions in cost were achieved by eliminating wasted space, modifying exterior trim, and utilizing standard material dimensions.

In 1909, Congress set limits to the amount of money that could be spent for each rank: quarters for generals were limited to \$15,000; field officers' quarters were limited to \$12,000; and \$9,000 was the maximum for company officers' quarters. Higher-ranking officers were entitled to either larger rooms or more rooms of the same size.

By the mid-1910s, standard housing plans were widely used in Army posts. However, there was little use of regional styles, with simple changes in materials being the only variation. During the first two decades of the 20th century, Colonial Revival architecture was popular. Commonly used in both Army and Navy construction, this style was often accompanied by Beaux Arts planning concepts.

The construction of military housing was interrupted by WWI, causing a nationwide shortage. In 1926, Congress enacted Public Law 45, which authorized the Secretary of War to dispose of 43 military installations and to use the funds for permanent construction at military posts (Grashof 1986: 43). The act also removed the standing \$20,000 limit on the cost of a single building. This was a ten-year program and by 1933, \$80 million had been spent.

Additional money for the Army was made available through the 1933 National Industrial Recovery Act. Approximately \$61 million was received for 660 projects at 65 posts, including the construction of 1,509 sets of quarters. Works Progress Administration (WPA) and Public Works Administration (PWA) funds provided an additional \$65 million for Army housing, adding another 1,091 sets of quarters (Grashof 1986: 46).

In 1927, Congress raised the cost limits for officers' quarters. Around the same time, Congressmen and Army officials expressed a concern that designs should respond appropriately to the different climatic conditions and architectural styles of the country. There was also a movement to layout the new posts in a less monotonous plan than existing bases; "the main objective was to create 'one great social organization' which would provide healthful conditions and positive social interaction as well as the more practical needs to properly train the troops" (Grashof 1986: 47). Houses were clustered in residential loops, influenced by picturesque, curving streets from "Garden City" concepts of suburban planning. The use of local materials and designs appropriate to local climatic conditions were preferred, but at the same time, the Army wanted an architecture that was national in character, yet reflected the various regions in the United States. Two primary styles, Georgian (or Colonial) and Spanish Mission, were adapted for use throughout the country. Apartment and duplex designs were also developed to save costs. Housing built by the Army between World War I (WWI) and World War II (WWII) represents the largest number of historically significant family housing units in the military inventory (Cullinane & Assoc. 2001: 5).

Tents and Rough Conditions at Hawaii's Early Army Posts

Hawaii's Army posts were typically built in remote, undeveloped areas. Enlisted men and even officers and their families had to live in tents until housing was constructed.

Four days after the annexation of Hawaii into the United States in 1898, the 1st New York Volunteer Infantry Regiment and the 3rd Battalion, 2nd U.S. Volunteer Engineers arrived in Hawaii and set up a temporary camp called Camp McKinley in Kapiolani Park. The following year, Batteries of the 6th Artillery Regiment joined the others at Camp McKinley. Camp McKinley, comprised solely of tent structures, was vacated after permanent Army posts were built.

Fort Kamehameha was established in 1909 as an Army coast artillery post. When the first troops arrived in 1913, some of the batteries had been completed, but Congress had yet to appropriate funds for the cantonment. Post headquarters operated from the western magazine of Battery Hasbrouck, and the troops slept in tents. The commanding officer's wife and the 2nd Lieutenant's wife lived in



Fort Kamehameha Officers' Quarters, c. 1916
Source: U.S. Army Museum of Hawaii

the casement intended for storing the mines for the closing of Pearl Harbor, and then in tents until quarters were built in 1916.

At Schofield, before arrival of the troops, a temporary camp was quickly constructed in 1908 by local laborers quartered at nearby Wahiawa. Lumber was sent up on the railroad, and work was supervised by the construction quartermaster, Capt. Joseph C. Castner. His plans called for tents for the officers and enlisted men, followed by temporary



Tent interior at Fort Kamehameha, c. 1913–1915
Source: U.S. Army Museum of Hawaii



Schofield Barracks, 1910
Source: U.S. Army Museum of Hawaii



Sgt. W.S. Sankey (5th Cavalry), his wife Lettie, and daughter Audrey, 1909
 Source: *Schofield Early Housing, U.S. Army Museum of Hawaii*

barracks, officers' quarters, and then an administration building, mess halls, and other support buildings. Most structures were wood-frame buildings elevated on concrete piers. A month after construction started, 473 officers and men from the 5th



Postcard of 5th Cavalry Officers' Row Quarters at Schofield, c. 1910–1913
 Source: *Schofield Early Housing, U.S. Army Museum of Hawaii*

Cavalry arrived at the new post, soon followed by their families. To the cavalymen and their wives, the post looked like “a raw hick town,” a frontier village deep in red dust and mud (Honolulu Star Bulletin Jan. 30 1937: sec. 3, p. 1). The men slept in traditional Army style tents with beaver boarding (made of compressed wood pulp) around them, while the officers' quarters were not much better. According to one officer's wife, “our houses were of boards, with wide-strips of screening, some tent drops, two small windows in front, one in the bedroom.” The houses were built “rather high off the ground,” with rough, built-in dining and kitchen tables that cracked when the boards shrank (Alvarez 1982: 26). In 1914, Major General William Carter, Department Commander, told the officers at the post that the conditions at Schofield Barracks not only were a great injustice but a rotten wrong, and he would make recommendations to the War Department at once to improve conditions for the troops and for the officers and their families



Schofield Barracks exterior
 Source: *Tropic Lightning Museum*



Schofield Barracks interior
 Source: *Tropic Lightning Museum*

(Addleman n.d.: 13). That same year, officers' quarters and the first permanent barracks buildings were completed.

Conditions at Bellows Field began similarly, even though it was developed much later than other Army posts in Hawaii. Prior to expansion of the facilities during WWII, the commanding officer lived in a small stone building, the only permanent structure on the installation. The other assigned personnel lived in tents set on wood frames. There were two rows of about 30 tents, facing each other

2-5



Tents at Bellows Field, 1940
 Source: “7 December 1941, *The Air Force Story*” book

and set about 100 feet apart. A wood building served as both the mess hall and dayroom. When new troops were sent to the post in 1941, they hated their new duty station. The tents were old and rotten, so equipment and personal belongings sometimes suffered considerable damage during heavy rainfall. Hordes of mosquitoes that bred in cane field ditches around the camp made life miserable (Arakaki 1991: 53). Temporary wood structures built in 1941 were a welcome relief.

Army Housing at Fort Shafter

Conditions for arriving personnel were not always so difficult. Fort Shafter had a typical Army post layout, with enlisted men's barracks, administration, and officers' quarters surrounding the parade ground at Palm Circle. Construction of the first phase was completed in 1907, and the second phase in 1909. Troops moved to the post upon completion of the buildings. Designed in the Colonial Revival style, the buildings were typical of military construction during that period. The building forms are similar to other standardized plans used by the Quartermaster between 1901 and 1908, but modifications were made, particularly more ventilation, to adapt them to Hawaii's climate.

Cantonment Areas at Hawaii Army Bases

Cantonment areas, or temporary billets, at many of the Army bases were of wood construction. Facilities usually included barracks for enlisted men, housing for officers and sometimes NCOs, and support facilities. Due to their temporary nature, most of these buildings have since been demolished.



NCO Quarters, tents and stables at Fort Shafter, c. 1916
Source: U.S. Army Museum of Hawaii



Fort Shafter Cantonment, 1916
Source: U.S. Army Museum of Hawaii

Two cantonments were constructed at Fort Shafter. A regimental post cantonment was built for arriving infantry troops in 1914 just east of Palm Circle. It included troop barracks, officer and NCO houses, and support facilities. Prior to WWII, a temporary cantonment, "Casual Camp," was built in the upper triangle area between Macomb Road and 7th Street (Meeken 1974: 16). All of these cantonment buildings have been demolished. Fort Kamehameha also had a large cantonment, including barracks, housing, and many support buildings, nearly all of which has been demolished.

Hawaii's Standardized Army Housing

The second standard housing design used by the Army in Hawaii, and the most common, is the Craftsman Bungalow style. Constructed at four



Craftsman-design house at Schofield
Source: Mason Architects, Inc.

Army installations in the 1910s and 1920s, the one-story houses were designed in the Honolulu Office of the Constructing Quartermaster. Examples of this Craftsman design are found only in Hawaii. The floor plan has several variations, but all are U-shaped layouts that originally had screened lanai and hallways, pitched roofs, single-wall board-and-batten walls, double-hung wood windows, and Craftsman-style detailing. Variations include minor changes in the plan layout, inclusion of a fireplace in the designs for Schofield and Fort Shafter (but not at Fort Kamehameha or most Luke Field houses), and gable roofs on Luke Field duplex units.

All of the officers' housing at Schofield built between 1919 and 1928 were Craftsman design, but several single-family and duplex floor plans were used. Similar houses were constructed in 1923 for officers at the Hawaii Ordnance Depot, now part of Fort Shafter; these four houses have since been demolished. Craftsman houses were constructed at Fort Kamehameha in 1916, and at Luke Field on Ford Island in 1922.

Mission-style houses, reflecting the popular architectural style of the period, were built at Schofield Barracks and Wheeler Field in 1932. The houses were originally built with flat roofs, typical

for the Mission style but not practical for the rainy Hawaii climate. To help accommodate the environment, hipped roofs were soon put on the houses, providing a much better barrier against heat and rain.

All of the 1932 Mission-style houses in Hawaii were one-story bungalows. Two-story houses were thought to be slightly more expensive because roof areas were larger. However, the Army considered "the bungalow well suited for southern and tropical climates" (Grashof 1986: 52). The majority of historic Army housing in Hawaii is one-story, but the earliest houses and some of the WWII houses are two stories.

Standard plans were also used just prior to and during WWII for one- and two-story single-family houses and single-story duplexes at Fort Shafter, Wheeler, Hickam, and Schofield Barracks. These units, built for both officers and NCOs, were constructed of concrete block with wood-framed hipped roof. The units at Schofield have been demolished, but all others remain and are relatively unaltered.

Grand Planning for Hickam Army Air Field

As was the trend in U.S. Army base planning at the time, Hickam Field was laid out according to city planning methods. The base layout, architecture, and landscaping were integrated, using the classical form of major and minor axes to organize the areas and to separate housing, administration, and technical aviation functions. This planning approach was far advanced relative to previous military base designs. One- and two-story houses at Hickam were designed in a Hawaiian-tropical style, often with some Art Deco detailing. Varying sizes and embellishments



2-8

Hickam Army Air Field, July 1941

Source: National Archives Still Photo Collection, RG 71 CA, Box 171

reflected the ranked military society. The Art Deco style, popular in the United States in the 1920s and 1930s, is well expressed in other buildings on the base with geometric and avian ornamentation.

World War II Temporary Construction at Army Bases

During WWII and the massive military build-up, large numbers of troops passed through Hawaii on their way to or from the Pacific war front. Facilities had to be provided in a very short time period. Temporary wood barracks sprung up in open areas on nearly every Army installation, and many men were housed in tents. Although standard plans were used for one- and two-story barracks, some modifications

were applied to make the structures more appropriate for the warm climate. Temporary single-family houses were also constructed. Nearly all of the WWII temporary construction has been demolished, following a national documentation process completed by the Army.

Apartment Housing at Army Bases

The Army first built apartment housing units in Hawaii during the early 1940s at Hickam and Wheeler Fields. After WWII, other apartment buildings were erected at Tripler Army Medical Center. More like row houses than apartments, each abutting two-story unit has individual exterior entries, unlike typical apartments that are usually one floor

and share common entries. The early 1940s apartment buildings are U-shaped, while the late 1940s ones at Tripler have a linear plan. This is probably due to the hilly Tripler site. Both apartment designs have minimal ornamentation.

Navy Housing History Comparison of Navy and Army Housing Issues

In the early decades of the 20th century, the U.S. Navy had a smaller housing requirement than the Army. There were fewer Navy personnel and most of lived aboard ships. Because the Navy built fewer houses, it seemed to rely less on standardized plans. This was the case with historic Navy housing in Hawaii. Drawings for housing at shore installations appear to have been specifically developed for each housing area, whether drawn by civilian architects or staff in the Navy's Bureau of Yards and Docks or in the installation's Public Works office.



Warrant Officers' Quarters, U.S. Naval Station, (Honolulu) Hawaii, 1902

Source: National Archives Still Photo Collection, RG 71 CA, Box 155 D



Permanent and tent housing at Naval Hospital, and Radio Station Pearl Harbor, Oahu, Hawaii, June 1921
 Source: U.S. Army, Bishop Museum

Like the Army, the Navy faced difficulties in obtaining funds for housing. The greatest problem was providing enough housing when personnel strengths suddenly increased, as in times of war or when new installations are being developed.

Coal Sheds and Other Early Housing in Hawaii for Marine and Navy Personnel

After Hawaii became a territory of the United States, the first Naval Station in the islands was established in 1899 at Honolulu Harbor, as there were no facilities and no navigable channel at Pearl

Harbor. Housing was built on the waterfront near downtown Honolulu. The first permanent Marine garrison arrived in Hawaii in 1904 and lived for four years in an empty coal shed at the Honolulu Naval Station. From 1908 until about 1913, they lived in tents at nearby Camp Very (named in honor of Captain Samuel W. Very, Commandant of the Naval Station) “a site which was later known as Fort Armstrong” (Marine Barracks n.d. a: 2).

By 1914, the earliest permanent housing had been built at Pearl Harbor, including the first eight houses for top Navy officers at Hale Alii and a large

barracks plus three houses and a duplex for officers at the Marine area. In the following seven years, four more houses were erected at Hale Alii and about ten other officers’ quarters were built for the Naval Hospital and Radio Station at Pearl Harbor. Most of the lower-level personnel for these two activities were housed in nearby tents until additional housing was built in the 1920s.

At the Submarine Base at Quarry Point, barracks were constructed for enlisted men (1929) and then for officers (1934). Housing conditions were spartan in these early decades. Twenty-four temporary wooden buildings, left over from WWI service in France, arrived at Quarry Point in January 1920. Some of these may have served as housing but photos show that tents were also being used. There was another temporary solution to the housing shortage at Submarine Base. In 1923, a decommissioned submarine tender, the USS *Chicago* (later renamed *Alton*), was converted to a barracks ship and a causeway constructed to its location in Quarry Loch.

2-9



Barracks ship moored at Quarry Loch for Submarine Base housing, February 1930
 Source: USS Bowfin Museum

Housing Development at Pearl Harbor and Other Navy Installations Between the Wars

The particulars of each neighborhood's development are given in Chapters 5 and 6. This section briefly summarizes the common themes in Navy housing history between World Wars I and II. As was noted in the Army section, almost all houses of these decades were one-story bungalows. Two-story historic housing at Navy installations on Oahu dates from either the early base period or the early 1940s. One notable exception is the 1921 house for the Commanding Officer of Naval Hospital (Facility 303), which was modeled after the 1914 Quarters A (Facility 1000) at Hale Alii.

2-10

The Craftsman-style bungalows built in Navy neighborhoods during the 1920s are similar to Army housing of the same period and style. Hospital Point's six waterfront quarters, the three 1923 houses at the north end of Ford Island, and the Chief Petty



Chief Petty Officer Housing on Ford Island, 1924
Source: National Archives Still Photo Collection, RG 71 CA, Box 152A

Officers' Quarters on Ford Island all have hip roofs, board-and-batten siding, and wood-frame windows, as do the more numerous houses built by the Army in the same period at Schofield Barracks and Luke Field. The Navy houses have a slightly more simplified Craftsman style than the Army ones.



Housing at the North End of Ford Island, 1939
Source: National Archives Still Photo Collection, RG 71 CA, Box 152A

In the 1930s, the only Navy housing built at Pearl Harbor was at the north end of Ford Island. These sixteen 1936 houses are similar to the earlier Craftsman houses but, unlike those, are built on concrete slab foundations and have L-shaped plans. The most unusual feature of this neighborhood is that the Commanding Officer's Quarters was built on top of the abandoned 1918 Battery Adair.

Other housing was built at three outlying Navy installations at West Loch and in Lualualei valley.

The three 1932 West Loch houses, now demolished, were the same as those built at Naval Magazine Lualualei. About 1932, 14 houses were erected at the Naval Magazine, and in 1938, 11 quarters were built (10 remain) at the Radio Station (now called Radio Transmitting Facility) in that valley. National Industrial Recovery Act funding was used for the radio station (Coletta 1985: 448). The Lualualei houses, unlike earlier Navy housing in Hawaii, were built with walls of concrete masonry units (CMU) instead of wood. Although the Army houses of the 1930s were also built with CMU walls, the Army and Navy housing styles of the period are quite different.

Housing Development at Pearl Harbor and Other Navy Installations During the 1940s

In the late 1930s and early 1940s, Oahu's military and civilian populations increased substantially. There was a great housing shortage, especially for enlisted men, and the Navy requested funding for land and construction for more housing. A committee report by the House of Representative in 1939 noted:

A number of enlisted men with their families are now required to live in Honolulu, at a distance of from 10 to 12 miles from the navy yard, in unsanitary, dilapidated and unhealthy surroundings. There is no possibility that private enterprise will provide suitable housing at prices which enlisted men can afford to pay (Honolulu Star Bulletin, April 4, 1939: 1).

A large amount of housing was built at all Navy installations in Hawaii in the early 1940s. Most of this was built by Contractors Pacific Naval Air Bases (CPNAB), under several large contracts that included numerous buildings and bases for the Navy on several islands in the Pacific. The housing constructed by this consortium of construction companies had a total capacity of over 20,000 inhabitants. Much of the housing that was started or planned before the December 7, 1941, attack remains. The neighborhoods built for the Navy in the early 1940s include those at the radio installation near Wahiawa, at (then) Naval Air Station (NAS) Kaneohe, at NAS Barbers Point, and several

at Pearl Harbor (Makalapa, Little Makalapa, Naval Housing Areas 1 [Hale Moku], II, and III, and Red Hill). Naval Housing Areas II and III were demolished three or more decades ago.

All of the houses in the Wahiawa, Makalapa, Little Makalapa, and Naval Housing Areas I and II neighborhoods were designed by the firm of C.W. Dickey, one of Hawaii's most noted architects. A consistency of design details is found among Dickey's housing, although there is quite a variation in floor plans and materials used. The Naval Housing Areas I and II were the only ones to include four-plex and six-plex buildings. These linear buildings were somewhat similar in concept to the

apartment buildings constructed by the Army in the early 1940s, especially when they were placed in courtyard arrangements.



*Courtyard created by three buildings in Naval Housing Area I (Hale Moku), with two-story duplexes (Facilities 176 and 178) flanking a four-plex (Facility 177)
Source: David Franzen Photography*

Despite the massive construction program, there was still much competition for the available housing.

As of March 1944, it is estimated that approximately 25,000 persons are practically homeless, and an equal number inadequately housed in "tenements that rival Gotham's Hell's Kitchen" (Contractors Pacific Naval Air Bases n.d.: A-929).

The Shipyard commander was especially anxious to get more housing assigned to his civilian workers, since they were having difficulty retaining workers who could not bring their families to Hawaii due to the housing shortage (Furlong 1942). The Shipyard wanted the ward buildings at Hospital Point converted to bachelor officer and enlisted quarters to free up the houses in Naval Housing Area I for civilian workers.



*Naval Housing Area (NHA) III (for civilians) in foreground, with NHA I and II in triangle beyond, July 1941
Source: National Archives Still Photo Collection, RG 71 CA, Box 171B (aerials)*

At Pearl City Peninsula some civilian homes were used by the Navy for housing during WWII, and the entire peninsula was acquired following the war. The area that had been leased by Pan American Airways was taken over by the Naval Air Transport Service. This included at least 14 small beach homes (CPNAB n.d.: A-845); nearby houses were used by other Navy activities.

Problems encountered during the Navy's rapid and massive housing development. One Navy housing area, described only as "adjacent to the Pearl Harbor Navy Yard" (probably Naval Housing Area II, since it was demolished about 1970), was found to be infested with termites in mid-1941 only months after completion of the project. The specifications apparently were prepared hastily and did not call for treated lumber or for ground treatment (Honolulu Star Bulletin July 12, 1941: 1). Another difficulty faced by housing projects was a regulation restricting use of critical materials, such as concrete, to the most important buildings. As it worked out, for housing under construction or design, the use of supplies that had already been ordered was allowed in the interest of speed.

Most of the housing built by the Navy in 1944 and 1945 were temporary structures—barracks or hutments for unaccompanied personnel—which have since been removed. Much of this was built by Navy Construction Battalions (CBs or Seabees), unlike the early 1940s housing that was mostly built by CPNAB. The cantonment at Aiea (present Aloha Stadium site) built by CPNAB consisted of 117 single-story barracks with "minimum frame construction" (U.S. Navy, Bureau of Yard and Docks 1947: 136).

The temporary housing was not suitable for reuse after the war, when families rejoined Navy personnel. The Quonset huts, temporary wooden structures, and tents were not designed for long life and had received hard use during the war years. Housing was built with the most available and inexpensive materials, especially during the last years of the war. Thousands of men were housed in tents, but by 1944, a memo called for the substitution of wood-frame structures or Quonset huts, due to a shortage of canvas (Towers 1944). On Oahu, temporary housing was erected at existing Navy installations, such as Naval Ammunition Depots Lualualei and West Loch, NAS Barbers Point, and Marine Corps Air Station Ewa as well as at new installations



Naval Housing Area II in foreground, built in 1941, with Quonset huts for WAVES Barracks beyond, built in 1944. Source: National Archives Still Photo Collection, 80-G-276 836

developed late in the war, such as Waipio Peninsula, Iroquois Point Annex, and much of the area near the airport, north of Kamehameha Highway.

Installation Exchanges that Affected Historic Housing Ownership After World War II

This chapter has focused on Army and Navy housing history because the housing at current Air Force and Marine Corps installations was originally built for the Army or Navy, respectively. After WWII, several military bases changed ownership, and in 1947, the U.S. Air Force—previously a branch of the Army—became a separate service.

Hickam and Wheeler Fields became Hickam and Wheeler Air Force Bases when the Air Force was separated from the Army. However, in 1991 the Air Force and Army worked out a real estate exchange. Fort Kamehameha, which had always been an Army post, was obtained by the Air Force in exchange for Wheeler Air Force Base, which was named Wheeler Army Airfield.

Ownership of Mokapu Peninsula had been shared by the Navy and Army during WWII. The Army's Fort Hase was vacated soon after the war. In 1949, Naval Air Station Kaneohe Bay was decommissioned, and the Navy moved most equipment and personnel to NAS Barbers Point. The Marine Corps obtained ownership of the entire peninsula in 1952. They kept the permanent buildings erected by the Navy, including the housing. Most of the Army's buildings at Fort Hase, largely temporary construction, have been demolished.

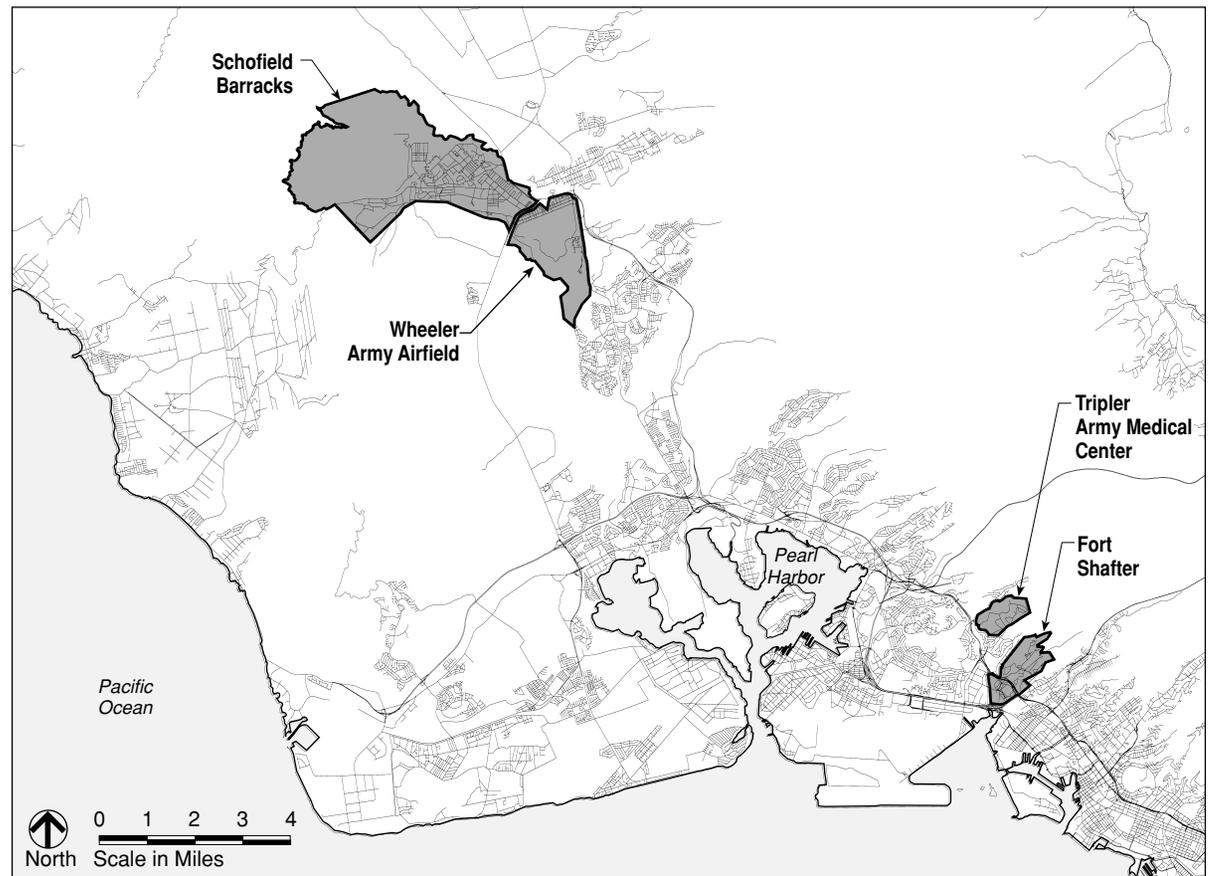
Chapter 3

Historic Neighborhoods: Army

There are currently four Army installations on Oahu with historic housing. These military posts were developed in different periods and for varying purposes, and the differences are reflected in the variety of housing.

Historically, the principal mission of the United States Army in Hawaii was the defense of the naval base at Pearl Harbor. The early Army bases were developed in strategic locations to protect the harbor from land or sea attack, while later bases and structures were oriented to air defense. The first Hawaii Army post, Fort Shafter, was established in 1907 on the south-central coast of Oahu to defend Pearl Harbor from land troops approaching from the east. Officers' housing, along with enlisted men's barracks, dining, and latrine facilities around the Palm Circle parade ground was built in the Colonial Revival style. Additional housing in a much simpler style was built at Fort Shafter just prior to WWII.

The site for Schofield Barracks, the base for Oahu's mobile defense troops, was selected because of its strategic location in the central valley of Oahu, north of Pearl Harbor. Permanent construction began in 1913. Craftsman-style Officers' housing was



Map of Army installations

built between 1918 and 1929 to accompany Enlisted Men's barracks. Mission-style officer and NCO houses built in 1932 at Schofield were of the same design as those being built concurrently at the adjacent Wheeler Field. Additional houses, duplexes, and apartment buildings of a much simpler style were built just prior to WWII.

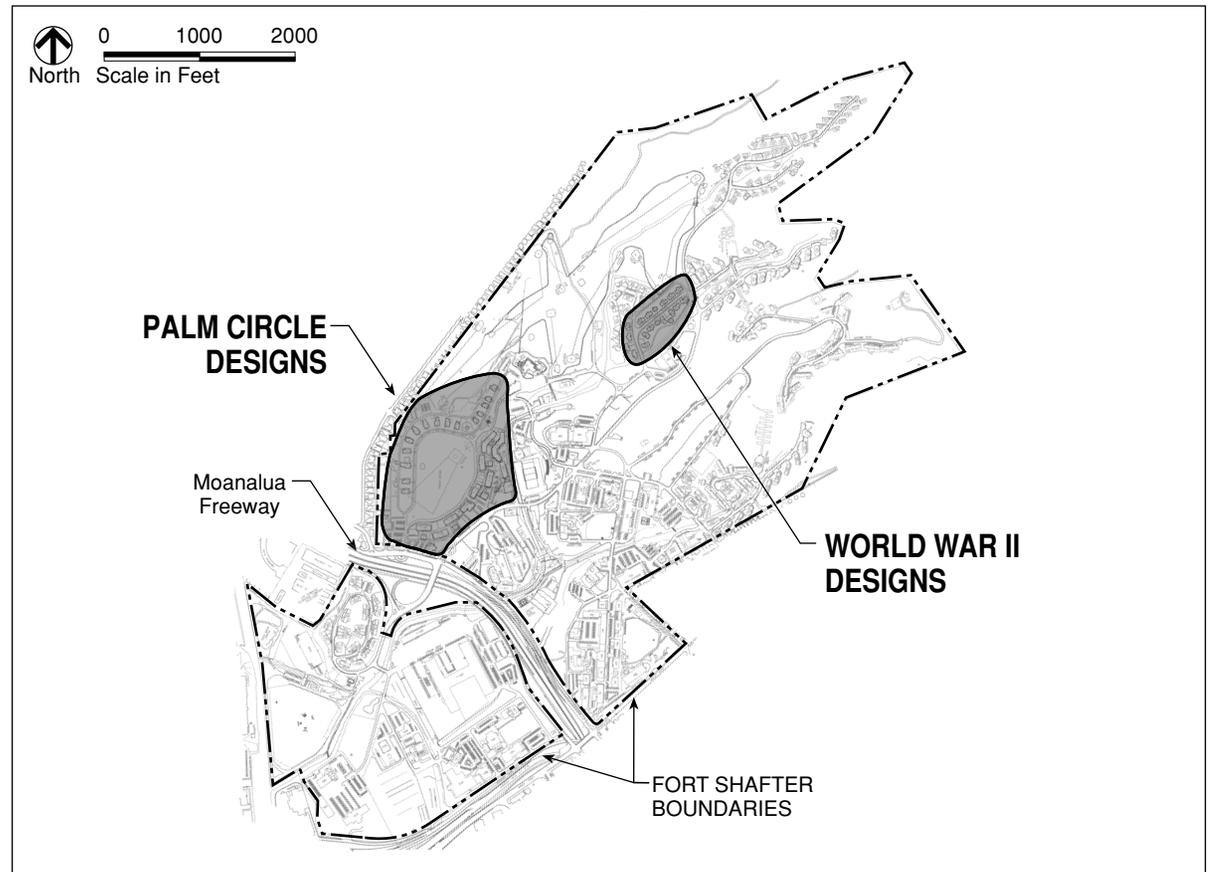
The original Tripler General Hospital was located at Fort Shafter and replaced by the current facility in 1948. Two apartment-style buildings for hospital staff were constructed on the hillside behind the hospital in 1951.

Fort Shafter Neighborhood Significance

Fort Shafter is significant as Hawaii's first U.S. military post and as U.S. Army headquarters in Hawaii. The post was established just after Hawaii became a territory of the United States in 1900. In 1921, Fort Shafter became the headquarters of the Hawaiian Department, and since then it has served as the Senior Army Headquarters in Hawaii.

The Palm Circle neighborhood was constructed between 1907 and 1924 as officers' housing at Fort Shafter. Sited around the Palm Circle parade ground, this housing area is one of the oldest and most intact groupings of military buildings in Hawaii. The officers' housing is on one side of the somewhat-circular parade ground, and the original barracks, dining hall, and latrine structures are on the opposite side. The original buildings, nearly all of which remain, are of this same architectural style, even the latrine structures. The buildings have a refined style, reserved but moderately decorative, befitting a headquarters and signifying the importance of its residents. The buildings are complemented by stately rows of royal palms which were planted around the parade ground just after the first buildings were completed in 1909.

The officers' houses constructed in 1943 are located on the east side of the base, just south of the golf course. These houses were built as defense housing from standard plans used at other Army installations on Oahu. Set along tree-lined winding streets, the houses are relatively unaltered and appear much as they did when first completed. They serve as



Fort Shafter vicinity

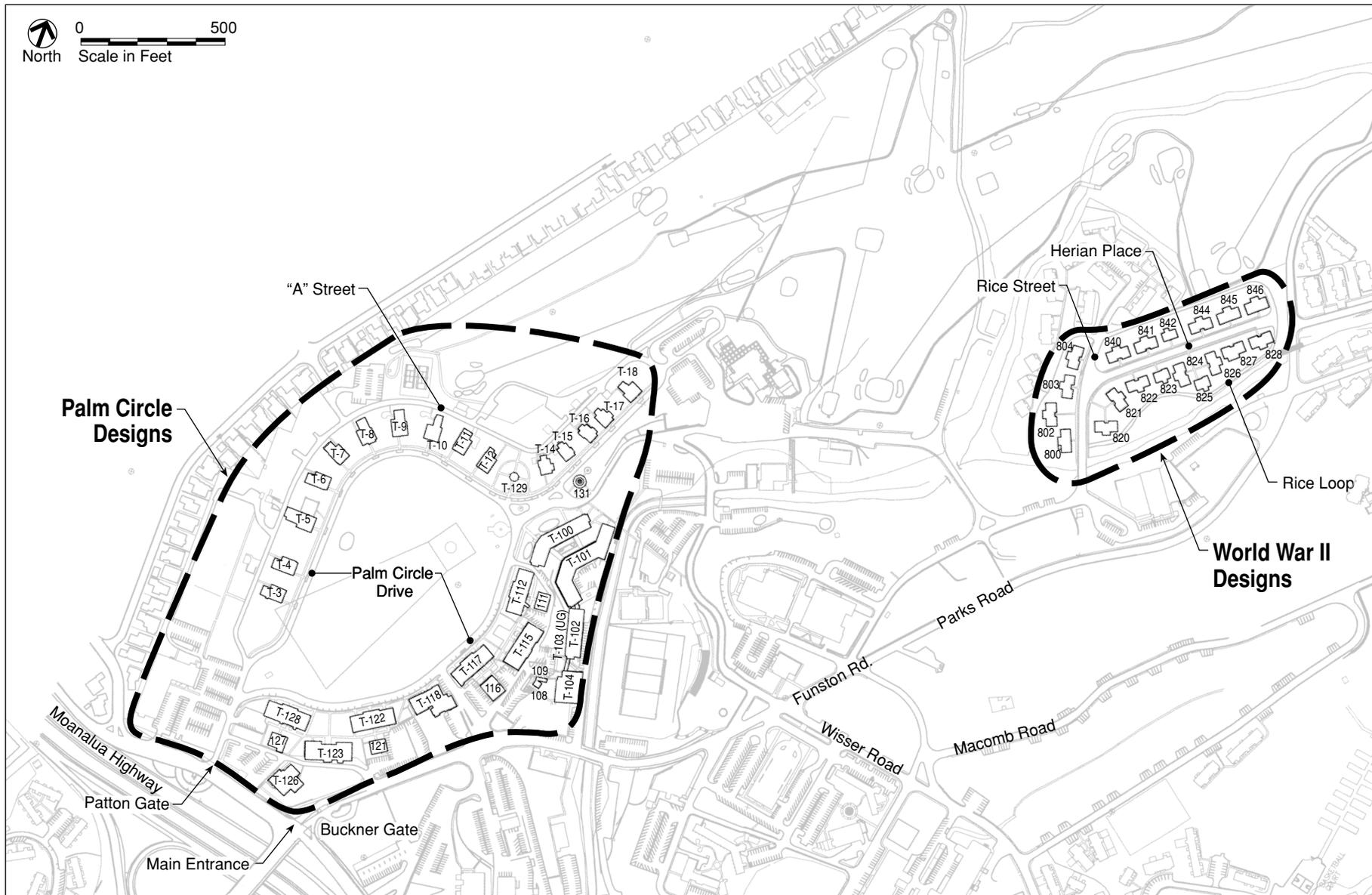
excellent examples of the WWII-era Army Officers' housing designs.

Neighborhood History

Most of the structures around Palm Circle were built between 1905 and 1909, all using the same architectural style. The original construction included 14 houses, an administrative building

(formerly T-14, now demolished), four barracks buildings, four latrine buildings, two mess halls (now T-115 and T-123), a post exchange building (now T-118), and a guard house (now T-126). Except for the administration building and the post exchange building, all of the buildings directly on the parade ground circle were originally used for

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3-4

Palm Circle and World War II neighborhoods at Fort Shafter

housing, with the officers' houses on the northwest side and the enlisted men's barracks on the southeast side. The supporting buildings for the barracks, including the two mess halls and four lavatories, were located behind the barracks buildings. The northeast and southwest sections of the circle were undeveloped.

Construction occurred in two phases, the first phase including all but four of the present quarters (5, 15, 17, 18) and buildings 119 (the pool, now demolished), 121, 122, 123, 127, and 128. Bids ranging from \$2000,000 to \$300,000 opened on June 12, 1905; the contract was awarded to Burrell Construction Company of New York. Captain E. H. Humphrey, QMC, was the Construction Quartermaster. The houses were specially designed by the Quartermaster Corps for Hawaii and are marked by a special number in the index of standard drawings. The building forms are similar to other standardized plans used by the Quartermaster between 1901 and 1908, but modifications (particularly to increase ventilation) were made to adapt them to Hawaii's climate.

Construction on the first phase began in August 1905 and would have been completed by October 1906, except for material shortages caused primarily by reconstruction following the 1906 San Francisco earthquake. Construction at Fort Shafter was completed on April 15, 1907, and the post was occupied in June. The second construction phase began in 1908 and was completed on August 30, 1909. Quarters 8, 9, and 10 were built as Captains' quarters, Quarters 3, 4, 7, 11, and 12 as Lieutenants' quarters, and Quarters 14, 15, 16, and 17 as NCO



Palm Circle at Fort Shafter, August 1909
Source: L. E. Edgeworth, Bishop Museum

Quarters. Building 13 (at that time numbered 14, now demolished) served as Post Headquarters.

Fort Shafter's Post Hospital was established in 1907, and was located south of Palm Circle, across King Street. The original hospital buildings were completed between 1907 and 1909. The remainder

of the main hospital facility was substantially completed by 1919. The buildings included an administration building, mess hall, kitchen, wards, clinic, dormitory, and quarters for nurses and hospital stewards. The hospital was enlarged during WWII to add 15 ward buildings, four officers or nurses quarters



Palm Circle in June 1934 showing original Tripler General Hospital
Source: U.S. Army Museum of Hawaii Photo #2798

buildings, four 50-men barracks buildings, one mess building, a receiving and evacuation building, and a water heating plant. The current Tripler Army Medical Center was occupied in 1948 and the Fort Shafter hospital buildings were demolished during construction of the H-1 freeway in 1958–1960. The former Fort Shafter hospital site is now occupied by housing, which was constructed in 1962.

Quarters 18 was built later than the other houses, and the loop of A Street and Palm Drive was extended to include this unit. Completed in June 1924, it was originally intended to serve as the Field Officers’ Quarters, but was instead used by the commanding officer of the hospital. The barracks buildings T-112, T-117, T-122, and T-128 were converted to administrative spaces to accommodate the

Headquarters, Hawaiian Department in 1921. The main entrance to the post at this time was F Street, and was changed to E Street (now Funston Road) when the H-1 freeway was built.

The gradual construction began of the golf course began sometime after the arrival of the Hawaiian Department and was completed in 1936. An auxiliary flying field was operated on a portion of the golf course behind the officers’ club (building 710). Formally designated Putnam Field on August 19, 1933, it served the Headquarters, although no improvements were made beyond a grass strip.

In anticipation of the role that the Territory of Hawaii was to play in the Pacific during WWII, new administrative buildings were planned at Fort Shafter. The present Headquarters buildings (T-100, T-101, and T-102) were constructed in the unbelievable time of 49 days, with completion on June 27, 1944. This complex of buildings, known as the “Pineapple Pentagon,” was the nerve center of Army logistical planning for the battles in the Pacific theater during the closing years of WWII. After WWII, Building T-100 was officially named Richardson Hall in honor of the general. Additional administrative buildings were constructed at Palm Circle during WWII. These include T-21, T-27, and T-28, constructed behind Quarters T-14, the first two of which were later converted to family quarters, and all of which are now demolished. Buildings T-104 and T-105 were completed in 1944 as the Civilian Cafeteria and Post Exchange.

Other new buildings were constructed at Fort Shafter in the buildup prior to and during WWII,

although the base did not see the immense expansion that occurred on other Hawaii Army bases. In addition to officers' housing constructed just south of the golf course, underground bomb-proof structures and anti-aircraft sites were constructed.

After World War II no regiment was stationed at Fort Shafter. The Ordnance and Signal Depots were oriented to the support of Schofield Barracks.

A major reorganization in 1974 resulted in the elimination of the theater-level Army headquarters (U.S. Army Pacific) and the relocation of the Hawaiian-level Army Headquarters (U.S. Army Support Command Hawaii) from Schofield Barracks to Fort Shafter. The houses have continued to serve in the same capacity, as residences for the officers of Fort Shafter and their families.



Palm Circle neighborhood landscape
Source: Belt Collins

Major Landscape Features of Neighborhood

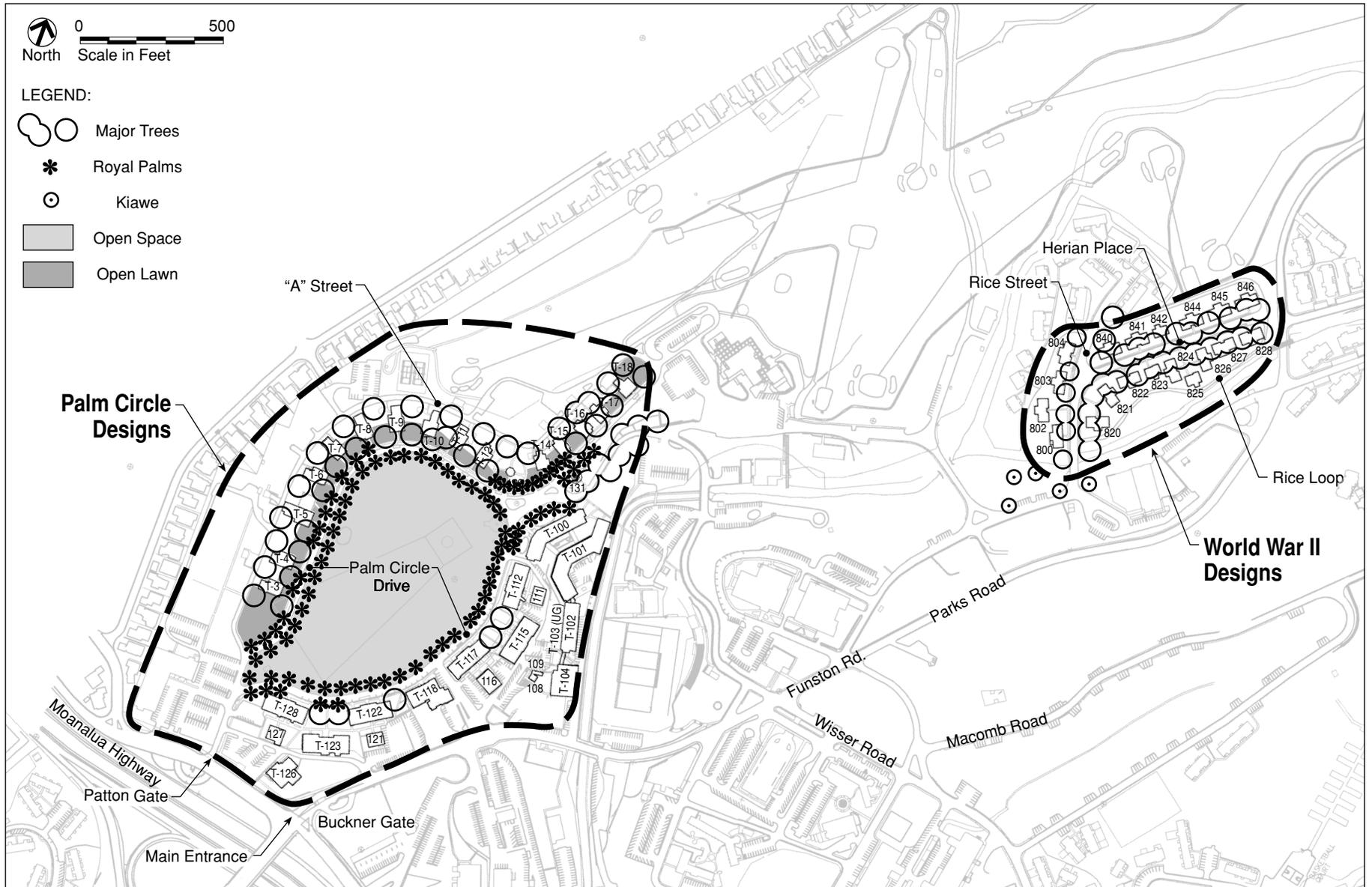
The Palm Circle neighborhood's layout is along one side of Palm Circle Drive, which encompasses the parade ground. The original barracks and other support structures (now administrative offices) were located on the opposite side of the parade ground. The Officers' Quarters are located on the northwest side of the Palm Circle Drive, which serves as the formal public entry to the neighborhood. Street "A" runs along the rear of the neighborhood and acts as the private utilitarian access.

The key landscape feature of the neighborhood is the royal palm lined parade ground from which the neighborhood gets its name. These palms were planted between 1909 and 1911 at the insistence of Colonel Alfred Booth. Toward the north end of the parade ground is the post's flagpole. Directly across



Fort Shafter, 1963
Source: Bishop Museum

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3-8

Landscape at Palm Circle and World War II neighborhoods

the street and between quarters T-12 and T-14 is a formal garden area with a gazebo structure as the focal point.

Each of the Officers' Quarters is set back from the road creating a larger front yard space. This also adds to the formal entry to each of the units. Large canopy monkeypods are located in the front yards between the dwellings. Typical of other prominent Officers' Quarter's neighborhoods, the foundation plantings in the front and side yards are more formal in nature, while the back yards are less formal. All of the plant materials have a tropical plant palette.

The parade ground open space with its majestic royal palms is the focal point of the neighborhood. From the parade ground, there are views back toward the Koolau Mountain Range. At the north end of Palm Circle Drive from the Officers' Quarters, there are views back toward the Fort Shafter Golf Course. A tennis court facility is centrally located within the neighborhood along Street "A."

Major Trees/Palms

- Monkeypod
- Royal palm
- Norfolk Island pine

Other Trees

- African tulip
- Shower tree
- Formosan koa

The WWII housing designs are part of the Rice Manor neighborhood, the second historic neighborhood at Fort Shafter. These quarters are arranged linearly and are oriented onto Rice Street and Herian

Place. A rear service loop exists mainly for refuse collection. There are no garage structures within the rear yards of these units; all vehicles are parked along both sides of the street and create a cluttered street scene.

The unifying landscape elements throughout this neighborhood are the large monkeypod front yard trees. The foundation plantings around each of the dwellings are rather informal. All of the shrub planting is tropical in character; the front and back yards are grassed.

Some of the quarters on the northwest side of this neighborhood have a view back toward the golf course. The northeast quarters have a view back

towards the Koolau Mountain Range. There is no notable open space associated with this neighborhood.

Major Trees

- Monkeypod
- Kiawe

Other Trees

- African tulip
- Banyan
- Plumeria
- Brassia
- Norfolk Island pine
- Coconut



World War II neighborhood landscape
Source: Belt Collins



Palm Circle houses
Source: Mason Architects, Inc.

Palm Circle Housing Designs

Palm Circle is an excellent example of officers' housing constructed as part an early compact military post, consisting of enlisted men's barracks, support facilities, officers' housing, and the parade ground. The exceptional landscaping and picturesque palm tree encircled parade ground greatly enhance this neighborhood. The Palm Circle housing area has 15 houses, all built in the same architectural style. Three designs are utilized for several units: Quarters 3, 4, 6, 7, 11, and 12 were built as Lieutenant's quarters; 8, 9, and 10 as Captain's quarters; and 14, 15, 16, and 17 as NCO quarters. Quarters 5 and 18 have unique plans; Quarters 5 as the Post Commander's quarters, and Quarters 18 served as the house for the commanding officer of the hospital. Despite the span of construction years, the houses are of the same architectural style, with very few differences in detail, and have the same character-defining features.

The Palm Circle houses are all two-story structures with a wood framing system set on a masonry pier foundation. The foundation structure is wood with scored concrete piers along the exterior wall. Concrete steps with wood railings lead to the main entry. Some houses retain either the front or rear original stair railings, or both railings, which are similar to the interior stair railings with dense vertical balusters. The wood roof structures are hipped.

The building exteriors have horizontal wood siding and wood windows that are mostly double-hung or casement types. The double-hung windows typically have decorative tails protruding from the

Facility #	Facility or Design Name	Date
3, 4, 6, 7, 11, 12	Lieutenant's Quarters	1907
8, 9, 10	Captain's Quarters	1907/1909
15, 16, 17	NCO Quarters	1909
5	Post Commander's Quarters	1905
18	Hospital Commanding Officer's Quarters	1924

bottom of the upper sash. The windows have simple wood casings on the exterior, and operable windows have wood-framed screens. The houses feature enclosed lanai (porches) on the front, back, and often side of the structures. Sometime before 1934, the front and side lanai were typically enclosed with windows, with vertical wood tongue-and-groove below, although the original screen enclosures remain in a few locations. Quarters 3 through 12 have round columns at the now-enclosed front, side, and rear lanai, while Quarters 14 through 18 have square columns.

On the first floor, the Quarters typically have a front foyer and main stair, living room, dining room, and a study. The back portion of the first floor contains the kitchen and usually the pantry and servant's quarters. The front and back portions of the first floor originally were separated by the back stair, which was enclosed with screens. The walls at the back stairs have exterior siding. The back stair area is now always enclosed with windows and used as part of the interior of the house. Bedrooms and bathrooms are on the second floor.

French doors once existed at the openings between the now enclosed front and side lanai and the interior rooms on the first floor. Some of these doors remain, but others have been removed. Most houses still retain the original doorbells at the original front door. Doorbell-type buzzers at the lanai and other locations in the house were once used to call the servants.

The foyers, hallways, living rooms, studies/libraries, dining rooms, and bedrooms of Palm Circle homes all have plaster walls with a wood baseboard

and wood picture rail, and a simple wood casing at the cased openings, doors, and windows. The pantries in most homes and some of the kitchens have tongue-and-groove or canec wall and ceiling finish. They still retain some or all of the original built-in cabinets, some with original hardware. Original or early light fixtures remain in some residences..

The basements have concrete floors and walls and small double-hung wood windows. A few of

the basements still retain the historic shower and toilet enclosures. All residences, except at Quarters 6, have unfinished attic spaces.

Lieutenant's Quarters Plan (Quarters 3, 4, 6, 7, 11, 12)

The Lieutenant's Quarters plan has a foyer, living room, dining room, and pantry in the front portion of the first floor. The main stair case is located



*Front view of Quarters 3 (Lieutenant's Quarters), Palm Circle neighborhood
Source: Mason Architects, Inc.*



3-12

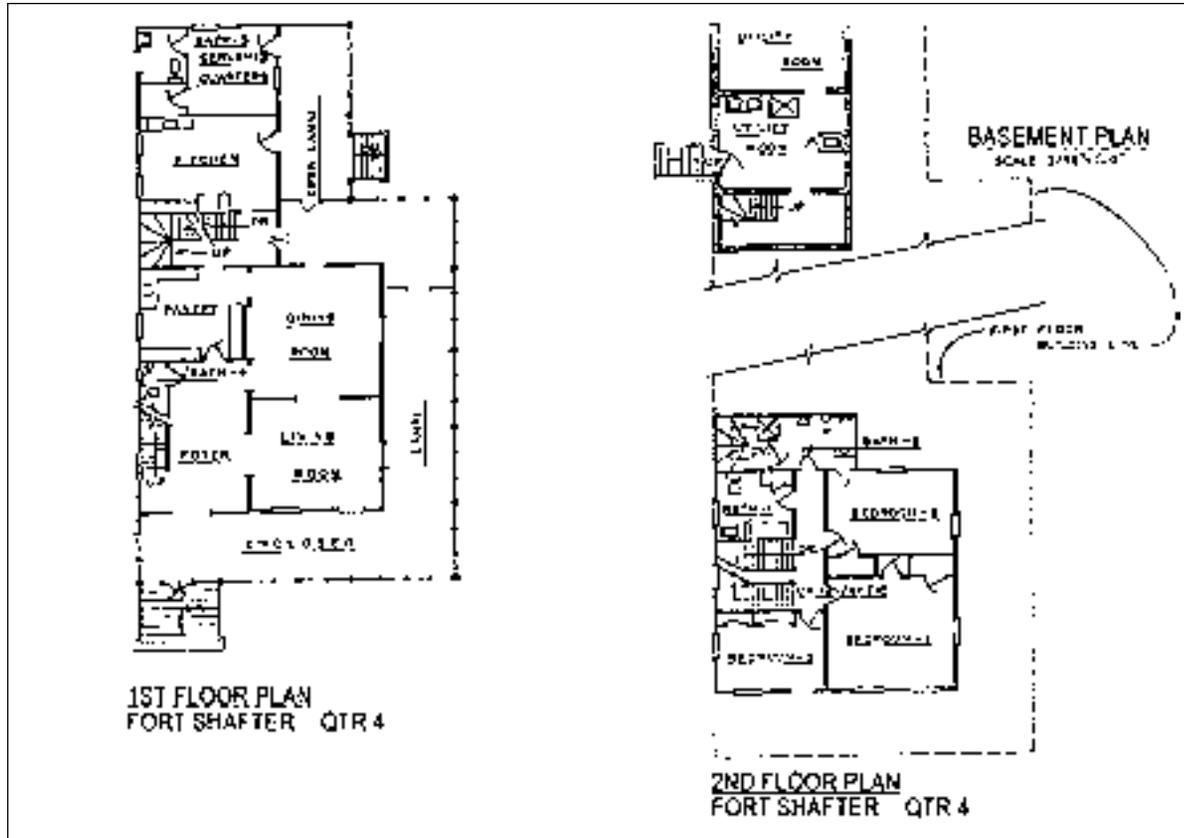
*Front view of Quarters 4 (Lieutenant's Quarters), Palm Circle neighborhood
Source: Mason Architects, Inc.*

*Quarters 7 cabinets
Source: Mason Architects, Inc.*

in the foyer, and a small bathroom is tucked below the stair. A lanai (now enclosed) wraps around the front, right side, and back of this part of the house and ends at the back stair, which links the main floor to the basement and the second floor. Beyond the back stair is the kitchen, which opens onto the back lanai. The former servant's quarters and bath is beyond the back lanai.

The second level above the front part of the house has a central hallway leading to three bedrooms and a bathroom. A second bathroom, at the top of the back stairway, can also be accessed from the central hall. The front stair leads up to the attic. The basement has two utility rooms, and also has a doorway and stairs leading to the outside. This design's lanai have round columns.

Typically these units have a pass-through window between the pantry and dining room. Some units have a built-in cabinet at the dining room side of the pass-through, which has glass doors above and drawers and wood doors below.



Main Stair at Quarters 4, Lieutenant's Quarters
Source: Mason Architects, Inc.

Quarters 4 floor plans

Captain's Quarters Plan (Quarters 8, 9, 10)

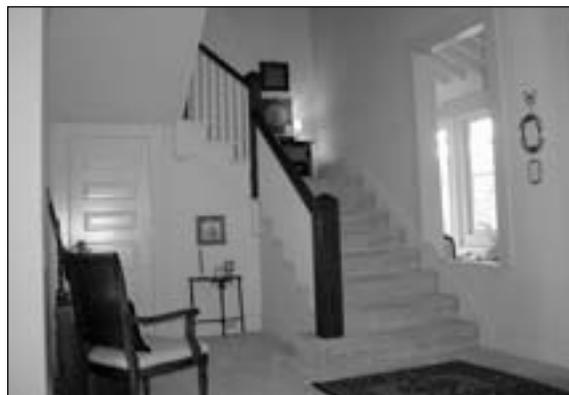
The Captain's Quarters plan has a central entry hallway and living room, study, dining room, and main stair (with small bath below) in the front portion of the house. A lanai (now enclosed) wraps around the front, right and back of this part of the house. The back stair is at the end of the central hallway. Beyond the back stair is the pantry, kitchen, and former servant's quarters. The back lanai also leads to the kitchen and former servant's quarters.

The second floor has four bedrooms. One bathroom is accessed from the central hallway, while another is accessed from the two front bedrooms. The front stair leads up to the attic. The basement is divided into two utility rooms; the back room has a door and stair to the exterior.

3-14



*Front view of Quarters 10, Captain's Quarters
Source: Mason Architects, Inc.*



*Front stair and door to bathroom underneath, Quarters 9
Source: Mason Architects, Inc.*



*Enclosed side lanai, Quarters 9
Source: Mason Architects, Inc.*

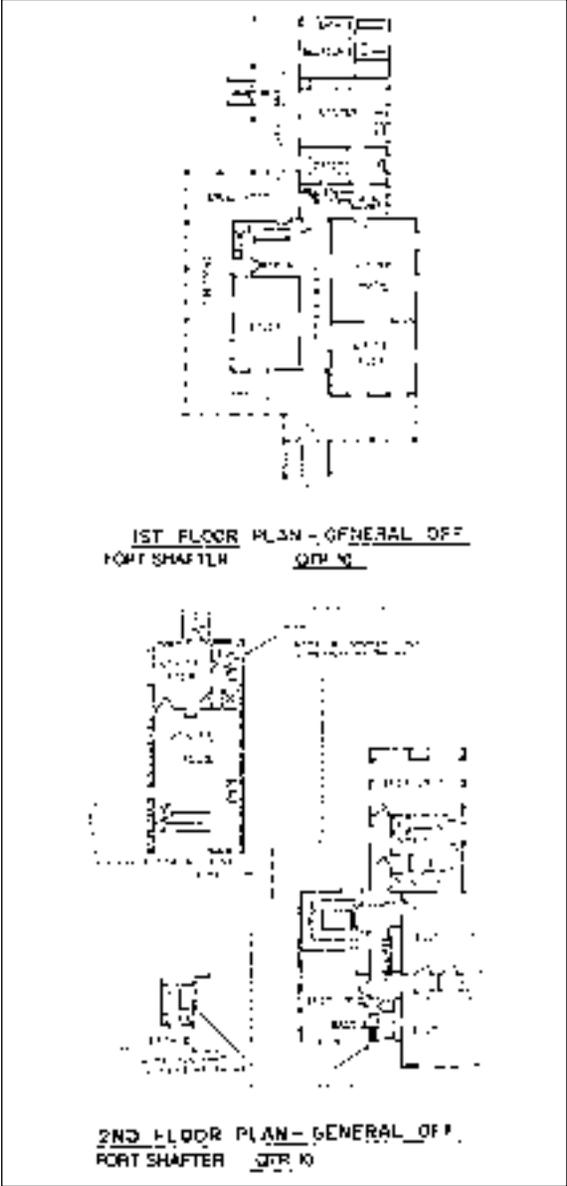


*Historic double doors to back stair, Quarters 8
Source: Mason Architects, Inc.*

**NCO Quarters Plan
(Quarters 14, 15, 16, 17)**

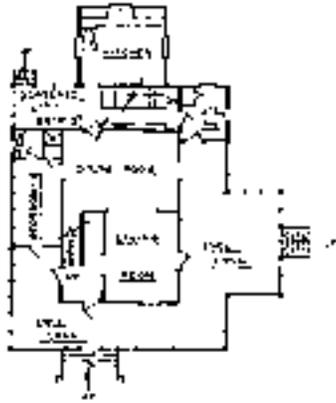
The NCO Quarters front entry leads into a hall with the front stair. The living room is on the right and the dining room beyond. The lanai, now enclosed, runs on all four sides of the front portion of the house. The lanai has been partitioned in all

four quarters to create a small bedroom on the left side, a bathroom, and a utility room. The secondary stair leading to the basement is at the back, and the kitchen is located at the back of the house. The second floor, accessed only by the front stair, features three bedrooms, a storage room, and two bathrooms.



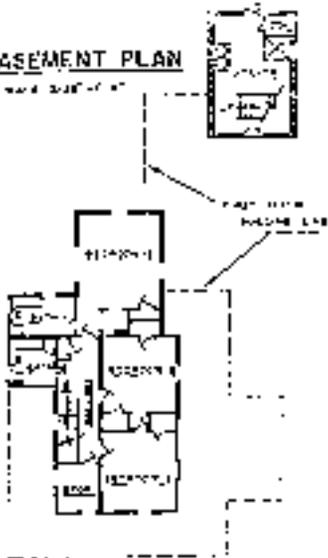
Front view of Quarters 16, NCO Quarters
Source: Mason Architects, Inc.

Quarters 10 floor plans



1ST FLOOR PLAN - GEN. OFF./COL.
QTR 17

BASEMENT PLAN



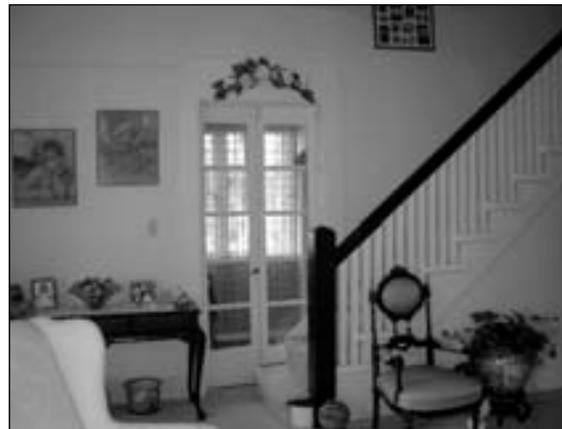
2ND FLOOR PLAN - GEN. OFF./COL.
FORT SHAFTER QTR 17

Post Commander's Quarters (Quarters 5)

The Post Commander's Quarters is the largest of the Palm Circle houses. It has continuously served as the quarters for the Commanding Officer of the post, the Hawaiian Department, or the senior commander at the base. This house has a patio area on the north side. A lava rock wall serves as a foundation wall for a small extension of the house and encloses the exterior patio. This feature was built in 1932 while the house was occupied by General B. H. Wells, Commanding General of the Hawaiian Department.



Interior of side lanai, Quarters 15
Source: Mason Architects, Inc.



Front stair and French doors, Quarters 15
Source: Mason Architects, Inc.



Quarters 5 (Post Commander's Quarters), c. 1920

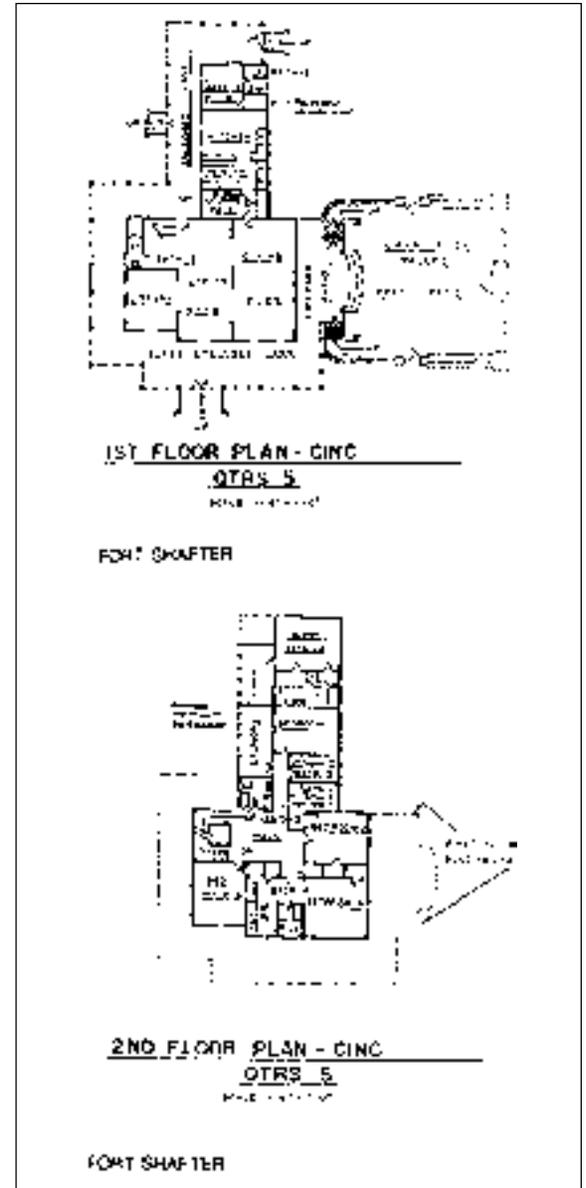
3-16

NCO Quarters floor plans



Lava rock wall enclosure at outdoor patio, Quarters 5
Source: Mason Architects, Inc.

The front portion of the first floor contains the living room, library, a large dining room, and the main stair with a small bathroom underneath. The back portion of the residence has the back stair, pantry, kitchen, and former servant's quarters with a bathroom. The lanai (now enclosed) runs around almost the entire perimeter of the first floor. The second floor features five bedrooms, four bathrooms, and a now-enclosed wrap-around lanai.



Quarters 5 floor plans



Front view of Quarters 5 (Post Commander's Quarters)
Source: Mason Architects, Inc.



Dining room, Quarters 5
Source: Mason Architects, Inc.



Front view of Quarters 18 (Hospital Commanding Officer's Quarters)
Source: Mason Architects, Inc.



Enclosed front lanai, Quarters 5
Source: Mason Architects, Inc.

3-18

Hospital Commanding Officer's Quarters (Quarters 18)

This residence, at the end of the housing row along Palm Circle, was the last constructed in the group of officers' quarters. It was completed in 1924. The architectural drawings state that it was intended for use by a field officer, but was apparently occupied upon completion by the commanding officer of Tripler Hospital (at that time located at Fort Shafter). The house was originally outside of the loop at the end of Palm Circle Drive and "A" Street, but the loop was eventually extended to include it.

There are several differences between this residence and the other Palm Circle houses. Quarters 18 has lava rock rather than concrete foundation piers and stair cheekwalls and it does not have decorative rafters or a basement. The chimney is constructed of unpainted brick rather than concrete. It also has wood paneling and canec wall finish in the main rooms on the first floor rather than plastered walls, and has a single stair instead of two. Despite these differences, the house still blends with the architectural character of the neighborhood.

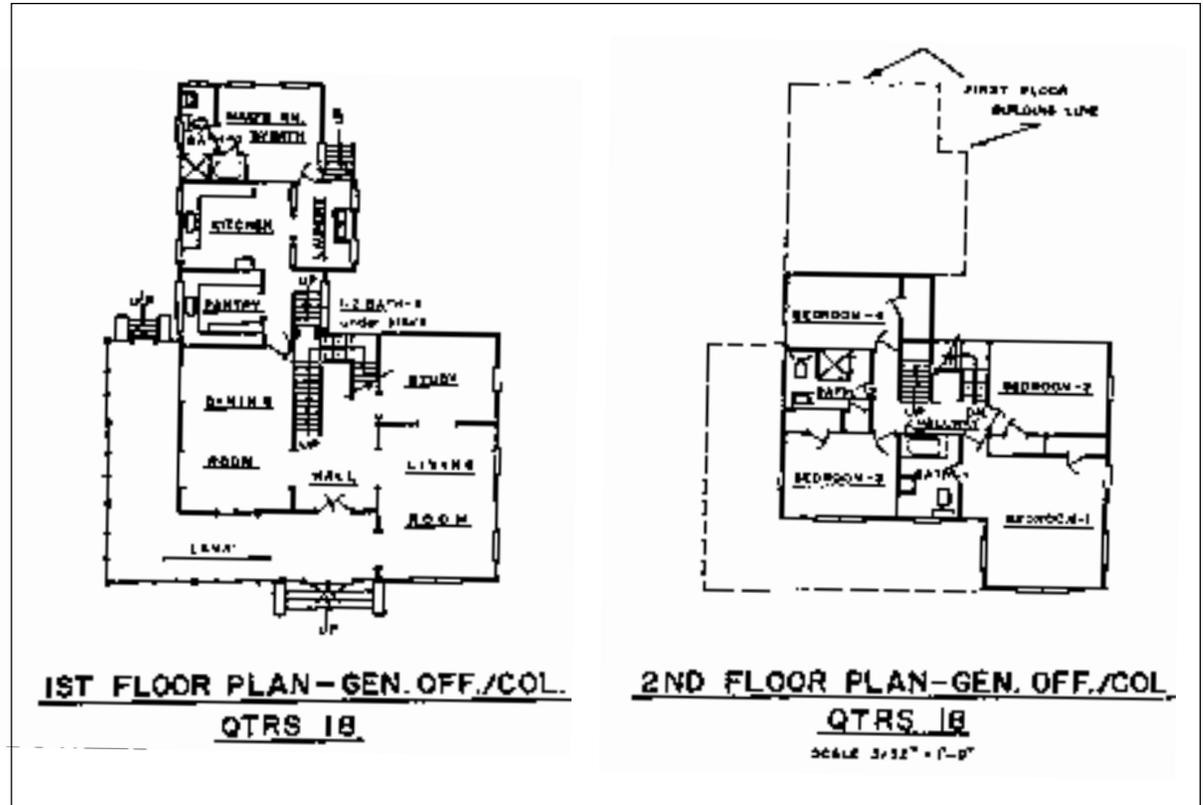
The first floor has a central entry leading to the stair, living room, study, dining room, pantry, kitchen, and former servant's quarters. The back lanai is utilized as a laundry room. The second floor has four bedrooms and two bathrooms.



Front hall and stair, Quarters 18
Source: Mason Architects, Inc.



Built-in cabinets at dining room, Quarters 18
Source: Mason Architects, Inc.



Quarters 18 floor plans

CHARACTER-DEFINING FEATURES OF PALM CIRCLE HOUSING

Exterior Features:

- Horizontal wood siding.
- Hipped roof with wood structure.
- Decorative rafter ends.
- Exposed eaves with no fascia or soffit.
- Vents at eaves with windows and screens or screens only.
- Round or square lanai columns.
- Historic double-hung, casement, or fixed wood windows.
- Concrete entry stairs at lanai.
- Historic wood handrails and railings.
- Historic wood panel doors with glazing and screen doors.



Original railing at rear lanai stairs
Source: Mason Architects, Inc.



Historic light fixture
Source: Mason Architects, Inc.

- Door transoms and sidelights.
- Chimneys.
- Monitor roof vents.
- Screened enclosures at lanai.
- Historic metal downspouts.
- Old house number above front door.

Enclosed Lanai Features:

- Round or square columns and top and bottom details.
- Wood floors.
- Historic double-hung, casement, or fixed wood windows.
- Original doors dividing lanai area.
- Historic doorbells.
- Servants' buzzers.
- Exposed roof framing.

Interior features:

- Plaster, canec, or tongue-and-groove walls and ceilings.
- Picture rails.
- Stairs and railings.
- Historic French doors.
- Wood panel doors and historic hardware.
- Door and window casing and transoms.
- Transoms and transom hardware.
- Historic light fixtures and wiring.
- Historic wood and glass cabinets and drawers.
- Historic cabinet hardware.
- Concrete chimney.
- Historic toilet and shower enclosures.
- Historic floor and shower tiles.
- Servant buzzers.



Decorative rafters
Source: Mason Architects, Inc.



*Original cabinets at kitchen and pantry
Source: Mason Architects, Inc.*



*Historic metal-lined shower, Quarters 7
Source: Mason Architects, Inc.*



*Historic wall sconce, Quarters 17
Source: Mason Architects, Inc.*

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Asphalt roof shingles (replaced original wood ones).
- Window A/C units.
- Over-painting of woodwork.
- Jalousie and non-historic fixed windows.
- Modern doors.
- Modern door hardware on historic doors.
- Wood awnings over windows at exterior.
- Metal valances above windows and doors at interior.
- Removed historic doors and windows.
- Non-historic flooring such as sheet vinyl or carpet.
- Skylights.
- Painted posts and handrails.
- Modern style light fixtures.
- Modern style cabinets and fixtures in kitchen and baths.
- Modern cabinet hardware on historic cabinets.

World War II Housing Designs

These houses were completed by 1943, although some may have been finished as early as 1941. Constructed as defense housing, they have the same design as others constructed about the same time at other Army installations on Oahu. There are three single-family homes and 16 buildings with duplex units.

The houses have concrete brick walls and wood frame hipped roofs with asphalt shingle roofing, with a small louvered gablet vent. The foundation has a concrete block perimeter wall and concrete footings

supporting a wood joist floor structure. Each covered entry porch has a wood column with decorative scoring at the top.

The interior walls have a simple wood base and ceiling molding. Original interior doors are single-panel wood doors. The original wood front door has a vertical groove pattern. The original windows are wood, one-over-one, double-hung windows with wood-framed screens.

Other than a small storage enclosure addition at the back and modernized kitchen and bathroom facilities, the buildings appear basically unaltered.

3-22

Facility #	Facility or Design Name	Date
823, 825, 842	Single-Family Houses	1943
800, 802-804, 820-822, 824, 826-828, 840, 841, 844-846	Duplex Buildings	1943

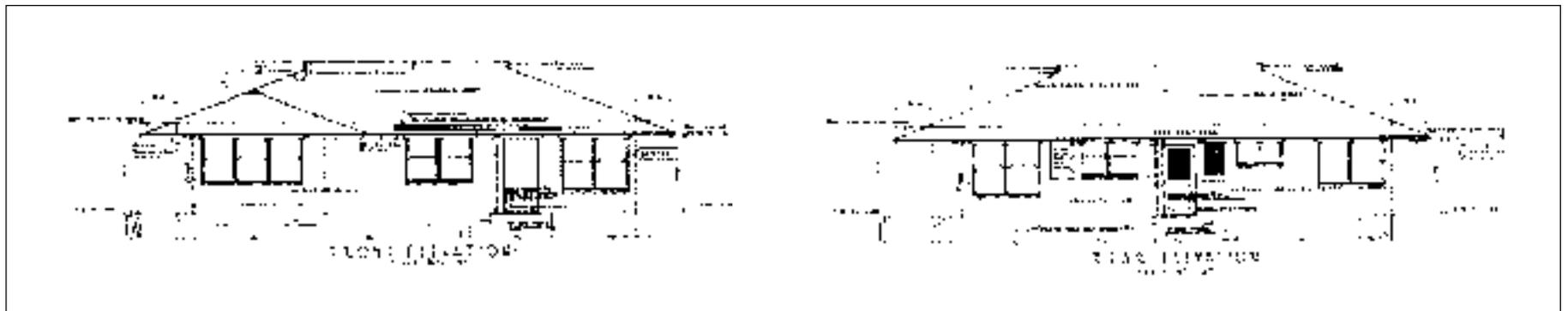
Single-Family Houses

The three single-family houses are one-story, three-bedroom structures. The front entry leads to a living room that occupies one end of the house. A central hallway from the living room leads to the kitchen, three bedrooms, and a single bathroom.



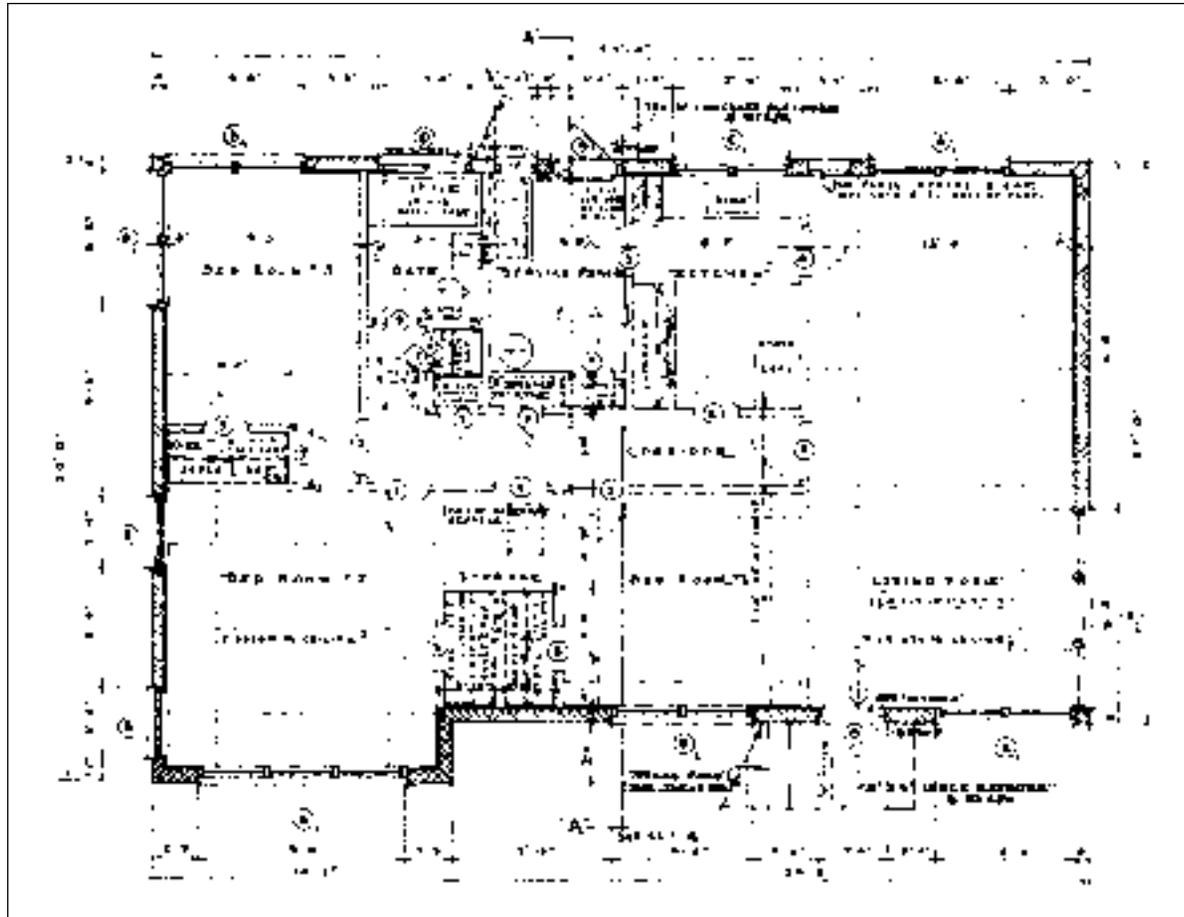
*Front view, World War II single-family house
Source: Mason Architects, Inc.*

3-23

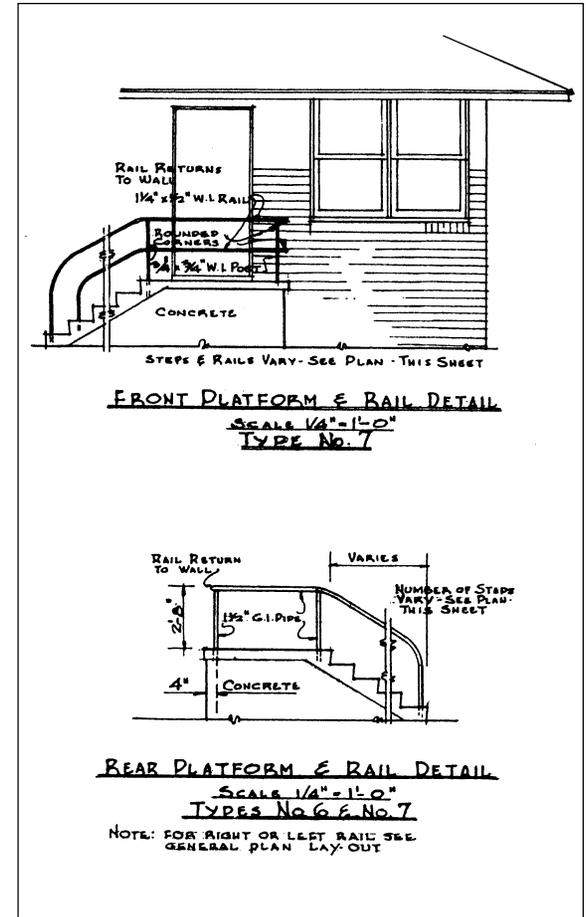


World War II single-family house original elevations

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



World War II single-family house original floor plan



Railing detail from World War II single-family house design

3-24

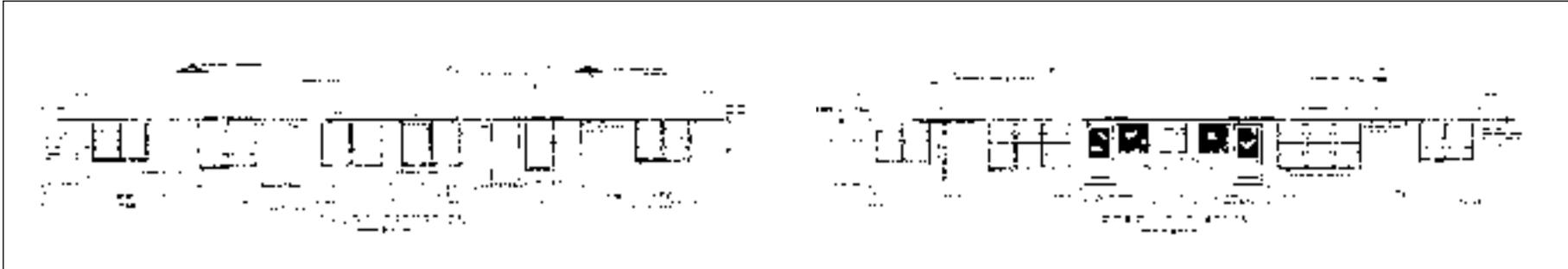
Duplex Buildings

The duplex buildings have two basically mirrored units. Each unit enters into the centrally located living room, which extends from the front of the unit to the back. The two bedrooms and bathroom are located at the building ends, and the kitchen, storage room, and service porch are located at the middle of the building.



Front view, World War II duplex building
Source: Mason Architects, Inc.

3-25



World War II duplex building elevations

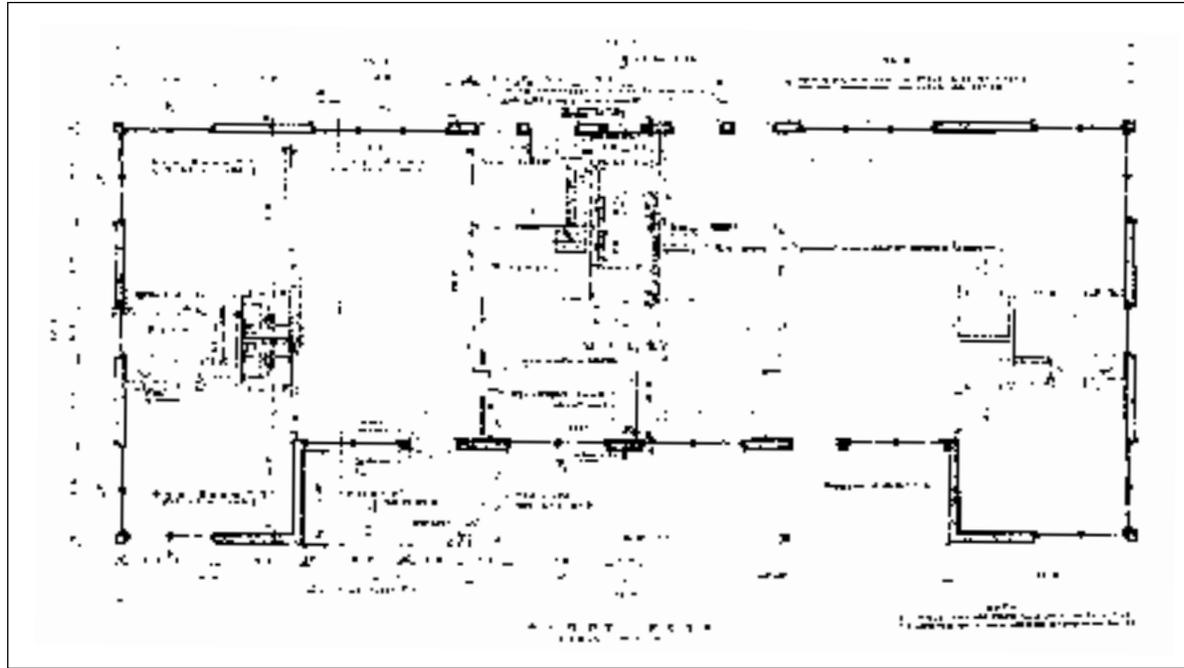
CHARACTER-DEFINING FEATURES OF WORLD WAR II HOUSING

Exterior Features:

- Concrete block exterior walls.
- Wood framed roof structure with open eaves.
- Shingle roofing.
- Small open porch entry.
- Wood post with horizontal grooves at porch.
- Original metal railings at front and rear entry.
- Vertically-grooved wood front door.
- Wood screen door with horizontal decorative trim.
- Wood double-hung windows.
- Wood-framed window screens.
- Angled concrete brick window sill.



World War II duplex building entry lanai
Source: Mason Architects, Inc.



World War II duplex building floor plan

Interior Features:

- Wood baseboard.
- Wood ceiling molding.
- Original built-in cabinets.
- Wood panel interior doors.
- Plaster wall finish.
- Original “insulation board” ceilings.
- Wood flooring.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Storage rooms constructed at back.
- Jalousie windows.
- Modern kitchen and bathroom finishes.
- Flush wood interior doors.

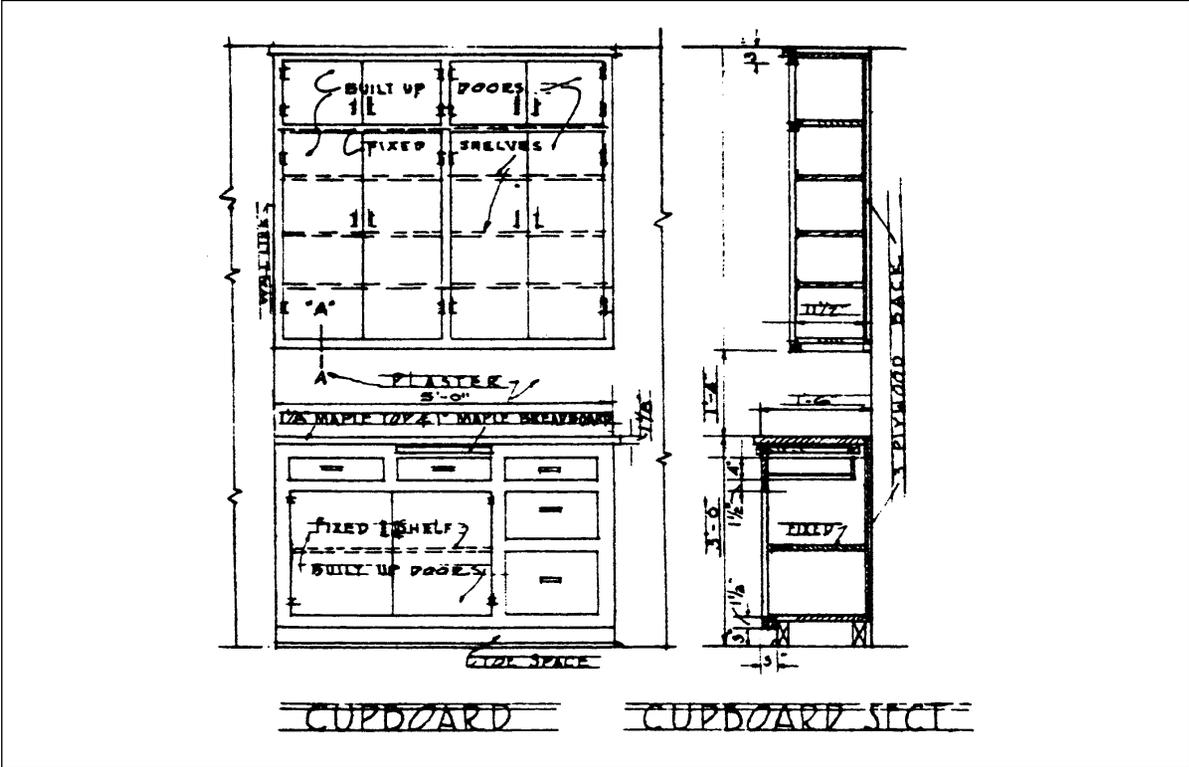
Designs Similar to Those at Fort Shafter

In the period just prior to, during, and immediately following WWII, several housing designs were used at multiple Army bases around Oahu. These included single-family, duplex, and apartment-style houses.

Hickam Air Force Base and Wheeler Army Airfield

The duplex structures built at Fort Shafter have the same design as the NCO duplex type 6 at Hickam Air Force Base and Wheeler’s NCO duplex quarters. The single-family house design at Fort Shafter is the same as Hickam’s NCO house plan 7. The Fort Shafter buildings appear to have been built using the same drawings as those used at Hickam, with minor modifications, as the Fort Shafter drawings also have “Type No. 6” and “Type No. 7” in the title block.

3-27



World War II duplex building cupboard details

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

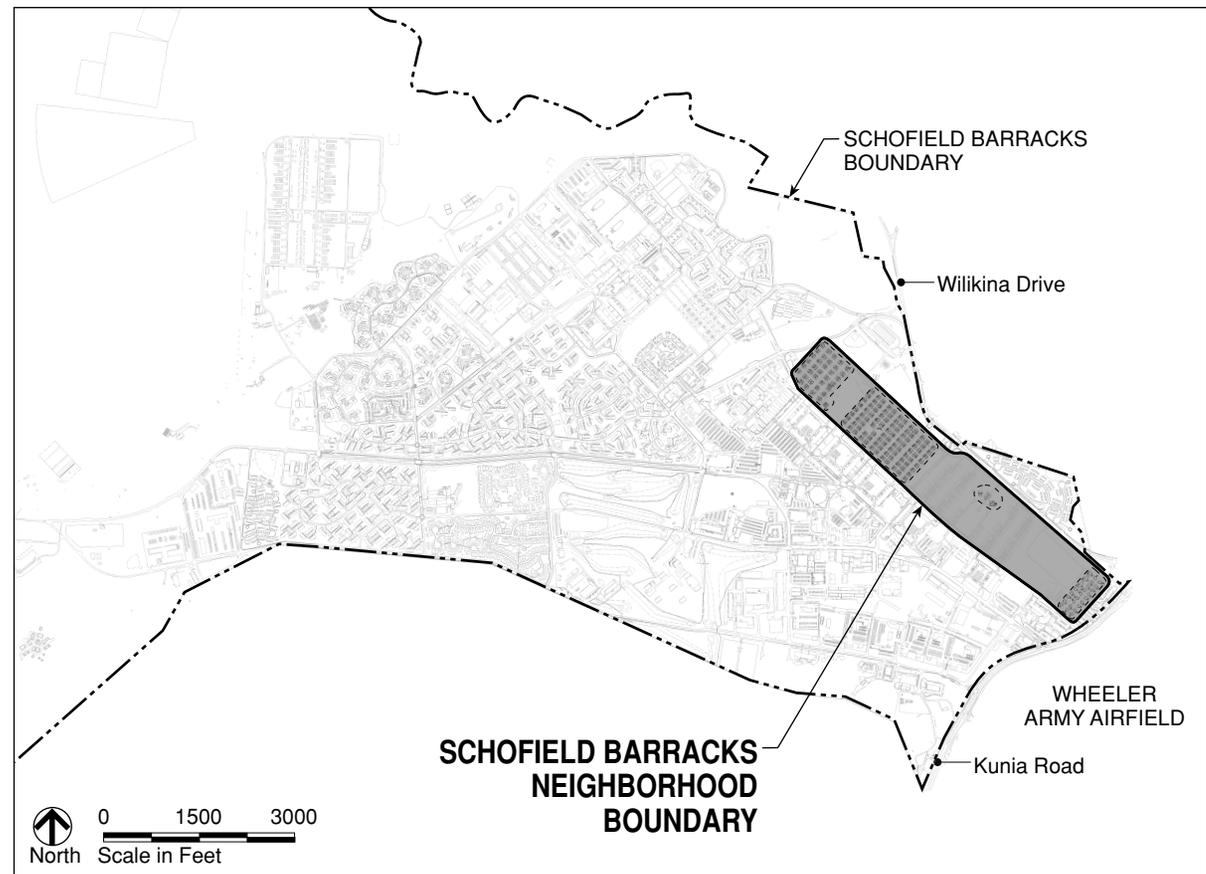
Schofield Barracks Neighborhood Significance

The Schofield Barracks neighborhood housing designs show a conscious response to popular and regional architectural styles, and to the tropical environment of the site. From 1890 until 1917, the Army's Quartermaster General had produced and used standardized plans throughout the mainland United States. The Army's standard houses until 1917 were generally two-story structures. These houses demonstrate an early acceptance by the Army of one-story houses, at least for posts in warm climates.

The Schofield neighborhoods also represent the typical military planning styles of the period. During the 1920s and 1930s, houses were typically clustered in residential loops on picturesque, curving streets drawn from "Garden City" concepts of suburban planning. The General's Loop and the housing areas originally located by Quads B and C reflect these concepts, set in residential loops with large front yard along tree-lined streets. The Canby and Leilehua Road area houses are organized in a grid pattern rather than the residential loop, but also have the spacious yards and substantial landscaping.

Neighborhood History

Historically, the principal mission of the United States Army in Hawaii was the defense of the naval base at Pearl Harbor. The perceived threat of Japan during the Russo-Japanese War instigated the buildup of naval forces in the Pacific and thus spurred an increase in Army personnel. After the



Schofield Barracks vicinity

establishment of Naval Base Pearl Harbor in 1901, a board was convened to investigate other appropriate sites for military defenses. The U.S. Army established Fort Shafter in 1907 to defend Pearl Harbor from the north. In 1908, the site for Schofield Barracks was selected as the base for Oahu's mobile

defense troops because of its strategic central location on the Leilehua Plain between the Waianae Mountain Range and the Koolau Mountain Range. Construction of temporary buildings began in December 1906 under the supervision of Captain Joseph C. Castner, the construction quartermaster.



Schofield Barracks, 1929

Source: U.S. Army Museum of Hawaii

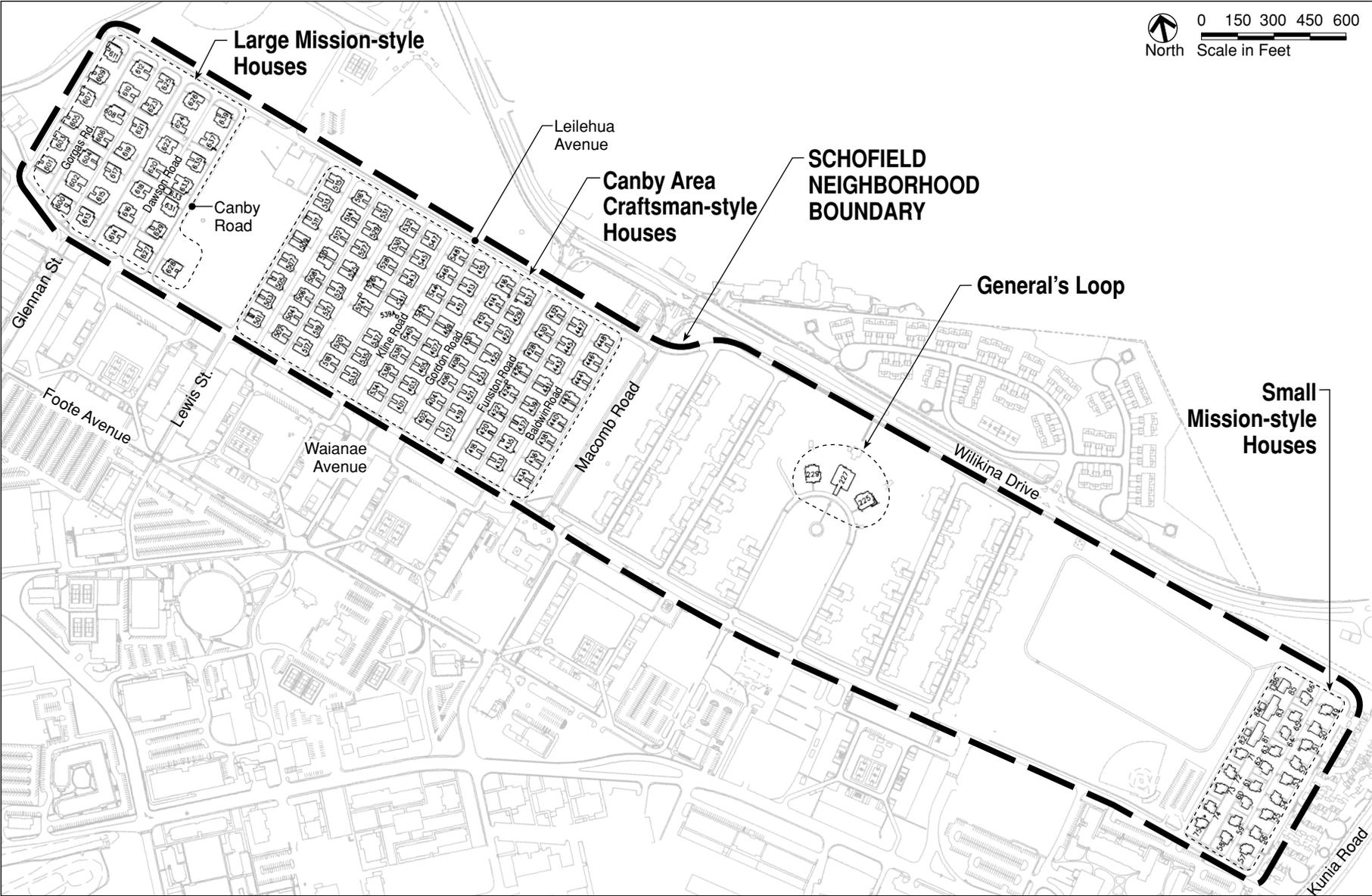
The first plans for the permanent post were prepared in 1912 by General Macomb. The layout reflects the linear base design, with the barracks and administration buildings along a central line, the housing areas on one side, and the technical buildings along the other side. The permanent buildings

were to be organized into seven contiguous sections, each one shaped in a rectangle headed by a loop. The rectangles were to contain barracks in quadrangular formation with the Officers' Quarters lining the loops; the main sewer and water lines ran down the center for economy.

Construction of the permanent post buildings began in 1913. Among the first completed in 1914 were the first two large masonry barracks buildings in what became known as Quad B. Each quad consists of three barracks buildings and one administration building, flanking the four sides of a central courtyard. Other buildings from this early period include the post library, the remaining buildings in Quad B and Quad C, which were completed in 1915 and 1916. Also constructed at this time were two loops of two-story Officers' Quarters, sited above Quads B and C. These were demolished after WWII.

In 1916, Schofield's construction quartermaster developed a plan for the remainder of the base. The post developed rapidly in the following years; plans were made, and in some cases, construction began on the remainder of the cavalry barracks, two more infantry quads, a new hospital, NCO quarters, and the post stockade. Construction was delayed during WWI when all of Schofield's tenants were called to war.

In the interim between WWI and WWII, the 1916 construction plan was carried out. The three Craftsman-style houses along General Loop were completed in 1918. Quads D and E were finished in 1920 and 1921. In 1920, expansion of the railroad and the initial phase of Quartermaster warehouses were started. The Officers' Quarters adjacent to Quads D and E were constructed between 1919 and 1922. Design of these U-shaped, Craftsman-style houses, which were also constructed at other Army bases in Hawaii, such as Fort Kamehameha, Fort Shafter, and Ford Island, were



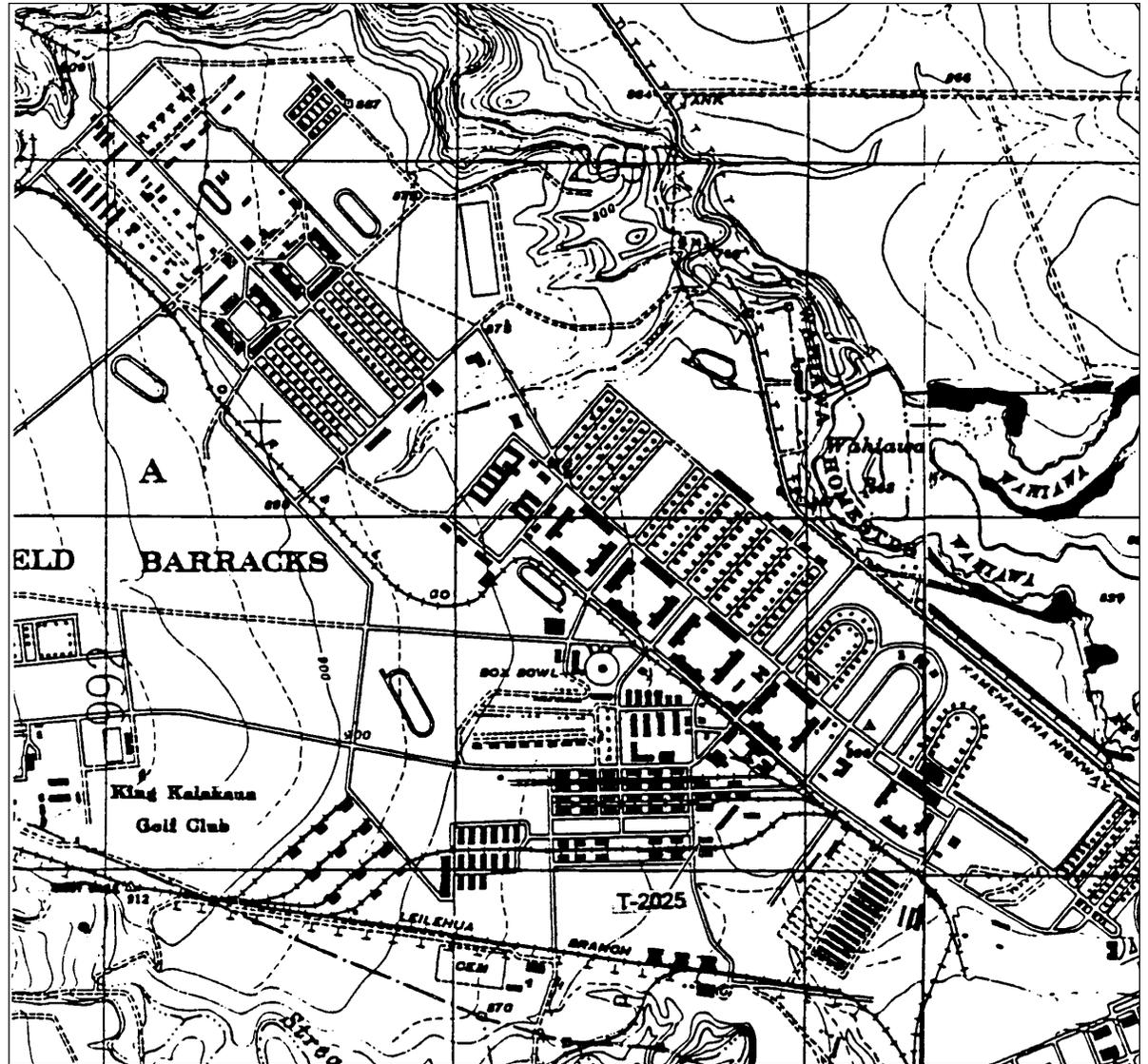
Schofield Barracks neighborhood

well adapted to Hawaii's climate. The first artillery barracks were completed in 1919 (Quad I), and the second in 1923 (Quad J). These quads also had the adjacent Officers' Quarters housing area, which has since been demolished. Other buildings constructed during this period included a permanent post stockade, new post chapel, post exchange, NCO Housing, fire station, outdoor boxing bowl and other recreational buildings, hospital, ordnance magazine area, and the remaining Quartermaster warehouses. The historic core of the base was essentially in place by the mid-1930s.

Following World War I, the Army increased the strength of the Hawaiian Department and formed a combat division at Schofield Barracks. The Hawaiian Division, formed in 1921 with its base at Schofield, was at that time the only complete division in the Army. The establishment of this large division and increased tensions in the Pacific explain the continual construction at Schofield during the 1920s and 1930s.

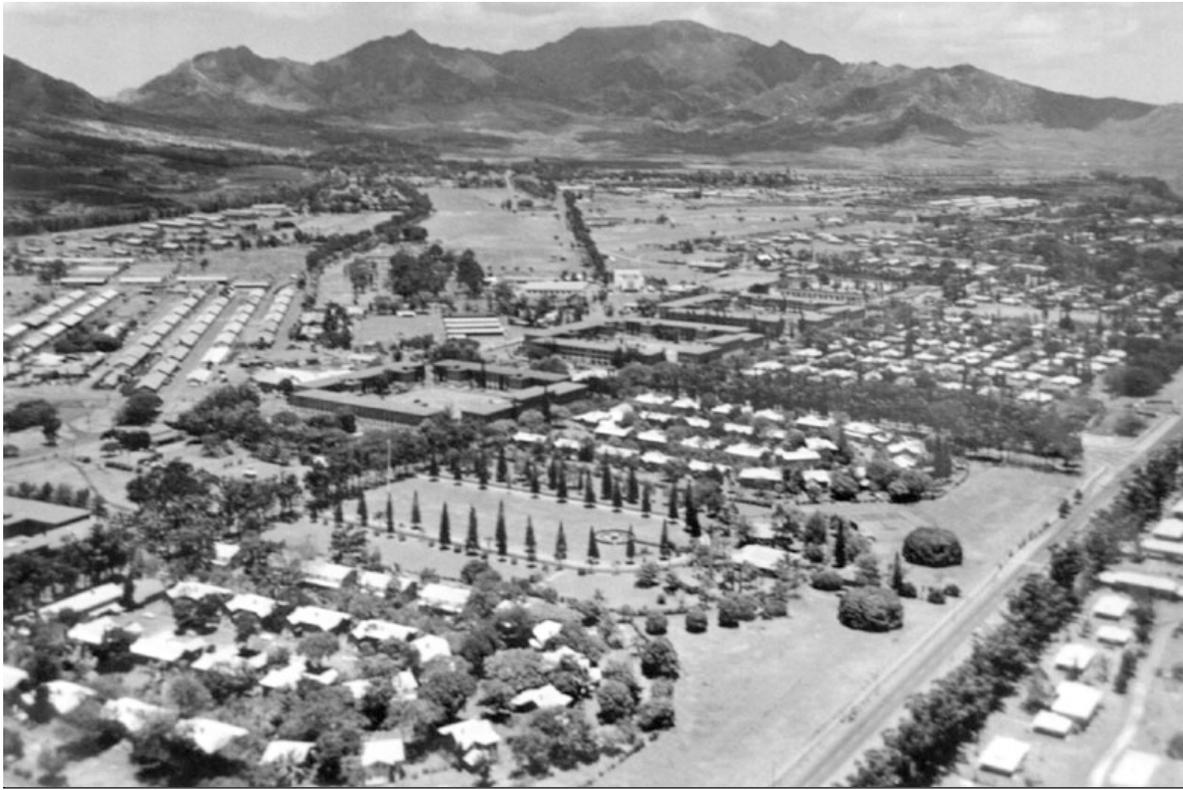
The last group of Officers' Quarters at Schofield, completed in 1932, was built to accompany Quad F. These Mission-style houses are similar to those constructed at Wheeler Field. The houses were built for officers and NCOs of the 11th Medical Regiment and the 19th Infantry.

Rising tensions in the Pacific in the late 1930s resulted in increased defense mobilization throughout the islands and reorganization of the Hawaiian Division in 1941, forming the 24th and 25th (later named "Tropic Lightning") Divisions. Schofield became the Army's largest single garrison and, in 1939,



Schofield Barracks layout, 1928

Source: Schofield Barracks Cultural Resource Management Plan [Ogden Environmental and Energy Services Co., Inc. (April 1995) "Draft Final Historic Preservation Measures FY 1995–2006 Whole Barracks Renewal Program at Various U.S. Army Installations and the FY95/96 New Infantry Brigade Complex, Schofield Barracks, Oahu, HI"]



Schofield Barracks, c. 1938, with the Waianae Mountain Range in the distance
 Source: Tropic Lightning Museum

was the second largest city in the Territory of Hawaii with a population of 20,000. Schofield Barracks' population grew in the two years before the war, attaining a total pre-war strength of 43,177 troops.

In the early morning of December 7, 1941, Japanese pilots flew from six aircraft carriers toward Oahu. The first wave of 183 planes struck its targets at 7:55 a.m. Schofield's 25th Division had the

distinction of being the first Army unit to receive hostile fire in the invasion, and shot down two Japanese planes. The post received some damage, mostly consisting of bullet holes in buildings, and many men received injuries from shrapnel and machine gun fire. Adjacent Wheeler Field, location of the Army Air Corps fighter planes, received severe damage to planes and hangars and had many casualties.

The Hawaiian Department's commander and his naval counterpart were relieved of duty following the attack on Pearl Harbor and other sites. They were replaced by a unified command under Admiral Chester Nimitz, Commander-in-Chief, Pacific (CINCPAC), and the Hawaiian Department ceased to exist. The primary mission of the 24th and 25th Divisions, supported by troops from the West Coast of the United States, became the defense of Oahu. As WWII progressed, Schofield Barracks became the major training, staging, and supply center for the war in the Pacific.

Various training camps were run at Schofield during WWII, including the Ranger Combat Training School, where men were trained for combat in the Pacific. Following the war, Schofield's population shrank to 5,000 troops. The population at the installation remained low until the outbreak of the Korean War. Schofield Barracks played an important role in the Korean War and the Vietnam conflict by providing basic training for many raw recruits due to be sent to Asia. These years saw a dramatic increase in military housing construction, as well as schools, chapels, and other support facilities. Today, Schofield Barracks remains the largest permanent installation of the U.S. Army outside the continental United States.

Major Landscape Features of Neighborhood

The linear layout of the Schofield Barracks neighborhoods follows that of Fort Shafter's Palm Circle neighborhood, with the houses situated around a significant open space. The Commanding Officer's Quarters are at the top of the loop with houses on both sides. General's Loop is the formal entry to these quarters. Similar to Palm Circle, General's Loop has a uniform tree planting along the road's edge, but instead of royal palms, General's Loop has Norfolk Island pines. Norfolk Island pines are also found along Waianae Avenue, which fronts General's Loop.

3-34 Waianae Avenue, the major arterial for all of the Schofield neighborhoods, has trees fronting the different neighborhoods which help to unify them. For instance, Norfolk Island pines along Waianae Avenue fronting the Commanding Officer's Quarters are seen throughout the General's Loop area. Monkeypod trees front the quarters of lower ranking officers.

A lush tropical plan palette surrounds each of the Officer's Quarters. Because of its close proximity to Wilikina Drive, the rear of this neighborhood is heavily screened with large monkeypod, banyan, and mango trees. The landform along the fence in this area is bermed to help reduce the noise of road traffic.

Housing density is quite low compared with other areas. The open space around the quarters are nicely landscaped with large canopy trees such as monkeypods, earpods, and banyans. The higher-density areas have little open space around the units.



Landscape at Schofield Barracks
Source: Belt Collins

The more notable open spaces around Schofield include the General's Loop area with its Norfolk Island pines; the Watts/Ralstom Field area with its ironwood, monkeypod, jacaranda, and eucalyptus trees; Canby Field neighborhood with its monkeypods and royal palms; and Gimlet Field neighborhood with its row of earpods.

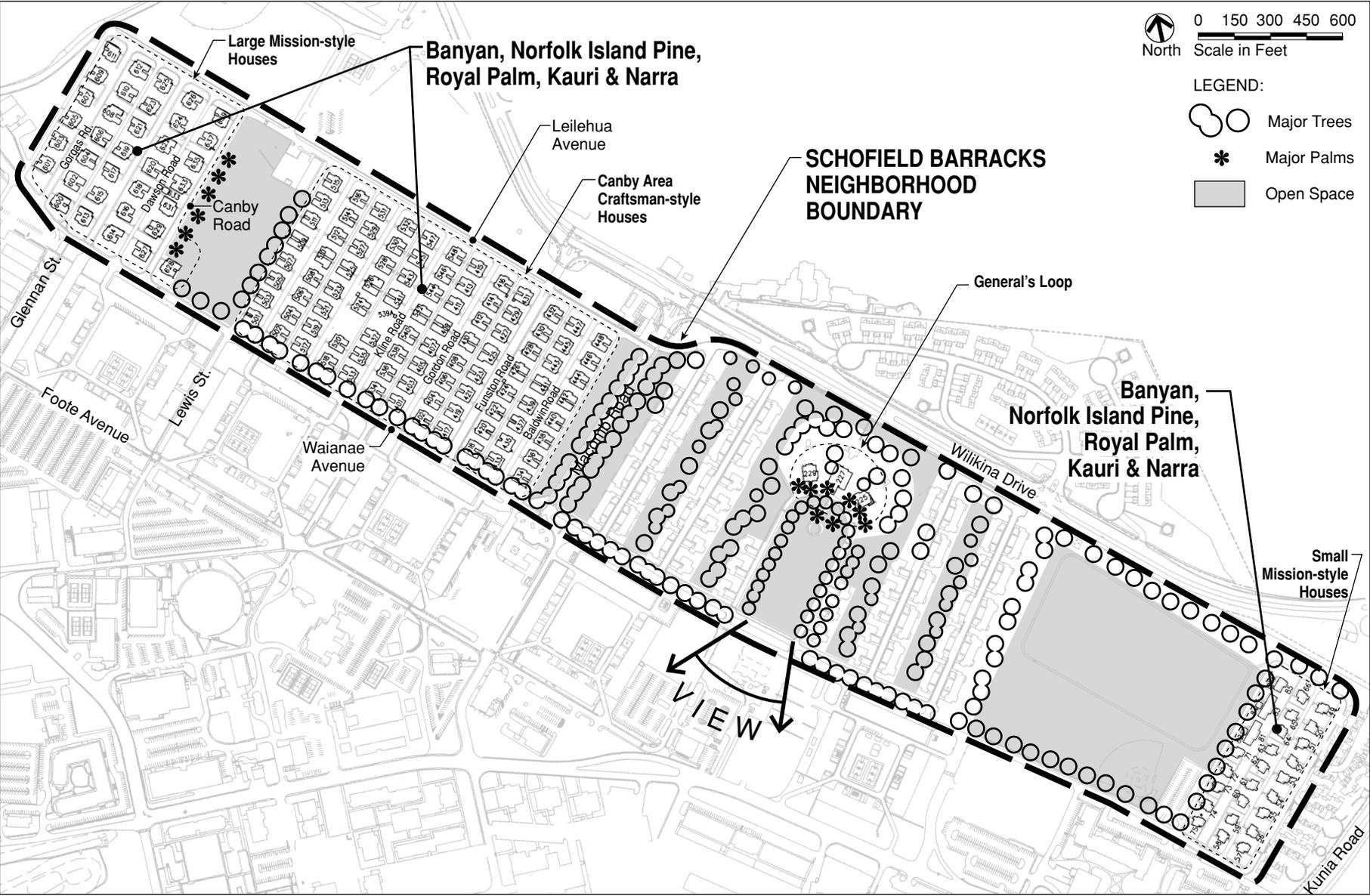
Major Trees/Palms:

- Monkeypod
- Banyan
- Earpod

- Norfolk Island pine
- Kauri
- Royal palm
- Ironwood

Other Trees:

- Mango
- African tulip
- Plumeria
- Brassia



Landscape at Schofield Barracks

Schofield Craftsman Design

The Schofield Barracks historic housing areas are good examples of residential communities developed to serve a military unit, with single men in a barracks complex and the officers in an adjacent housing group. The houses in the neighborhood can be categorized in two main design groups—Craftsman and Mission. They reflect the popular architectural styles of the period as well as regional influences.



Quads and houses at Schofield Barracks
Source: U.S. Army Museum of Hawaii Photo #6471

The Craftsman-style houses at Schofield Barracks represent an early recognition by the Army of the need for regional variations. Designed in the Honolulu Office of the Constructing Quartermaster, the designs show a conscious response to the regional architectural style and to the tropical environment of the site. These houses combine some of the refined Craftsman-style details with the single-wall, board-and-batten construction typical in

Facility #	Facility or Design Name	Date
225, 229, 401-408, 411-424, 427-440, 443-448, 501-508, 511-521, 523, 524, 527-538, 540, 543-548	Craftsman Corner Entry Plan (CNP Type I)	1919-1922
410, 425, 426, 441, 442, 510, 525, 526, 541, 542	Craftsman Center Entry Six-Bedroom Plan (Type L)	1919-1922
409	Craftsman Duplex Plan (Type K)	1928
509	Craftsman Center Entry Five-Bedroom Plan (Type M)	1928
227	Commanding Officer's Quarters Pan	1918
600-627, 629, 631, 633, 635, 637, 639	Mission Large Plan	1932
49-54, 56-66, 71-75	Mission Small Plan	1932

Hawaii's plantation housing. The pitched roofs, U-shaped plan around an open courtyard, and large screened areas show how Army housing design were adapted to tropical living by integration of the interior and exterior spaces. The screened lanai and hallway areas created a continuous indoor and outdoor circulation and also provided excellent cross-ventilation throughout the house.

Examples of these adapted Craftsman designs, found only in Hawaii, were built at several Army installations, including Schofield Barracks, Fort Shafter, Luke Field (at Ford Island), and Fort Kamehameha.



Craftsman-style Houses, 1923
Source: U.S. Army Museum of Hawaii

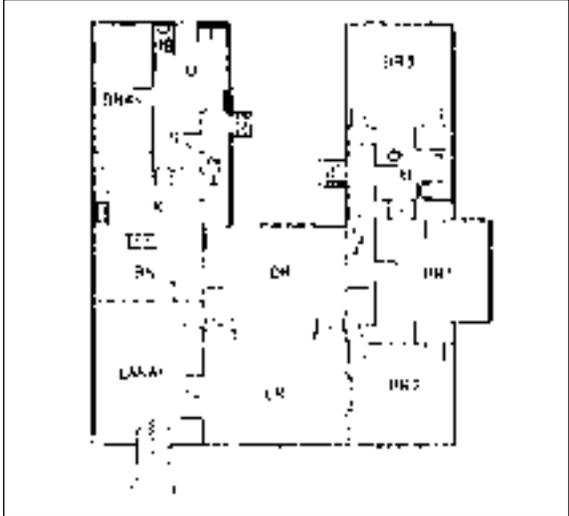
The Schofield Canby Craftsman housing area has 93 single-family houses and one duplex that were constructed over a period of nine years, between 1919 and 1928. The three houses at General's Loop were built in 1918. Although several different floor plans were used, the houses utilize the same construction materials and details.

Craftsman Corner-Entry Plan

The corner entry plan is the most commonly used of all the Craftsman-style house designs. There are 82 houses with this plan in the Canby neighborhood, and both of the houses at General's Loop are of this type. The plan is often mirrored so that the entrance may be on the left or right side of the front elevation. The main entry is into a lanai,



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Craftsman corner-entry floor plan

*Schofield Craftsman Corner-Entry plan
Source: Mason Architects, Inc.*

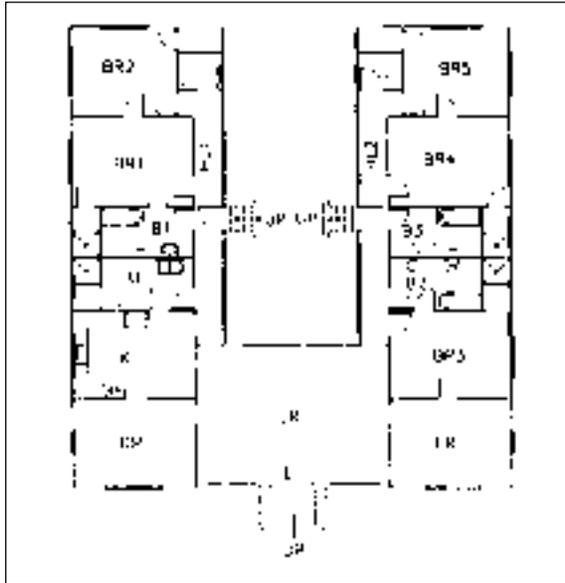
originally screened but now typically enclosed with jalousies or other windows. The living room and dining room are in the middle of the house. One wing consists of the kitchen, pantry, servant's and utility areas, while the other wing contains the three bed-

rooms. Quarters 229 at General's Loop varies from this standard design only in that the entry was moved to the center of the front elevation, and the dining room was moved to the previous location of the corner entry lanai, creating an expansive living room.

Craftsman Center-Entry Five-Bedroom Plan

One house in the Canby neighborhood of Schofield Barracks has this plan. The central entry leads directly into the living room. The dining room, kitchen, utility room (probably a former pantry), a bathroom, and two bedrooms from the former servant's quarters are located in one wing. The current family room, three bedrooms, and two bathrooms are located in the opposite wing. It appears that this building was originally a Bachelor Officers' Quarters building modified to create a single-family house. It was constructed in 1928, at the same time as Quarters 409, now a duplex unit but

3-38



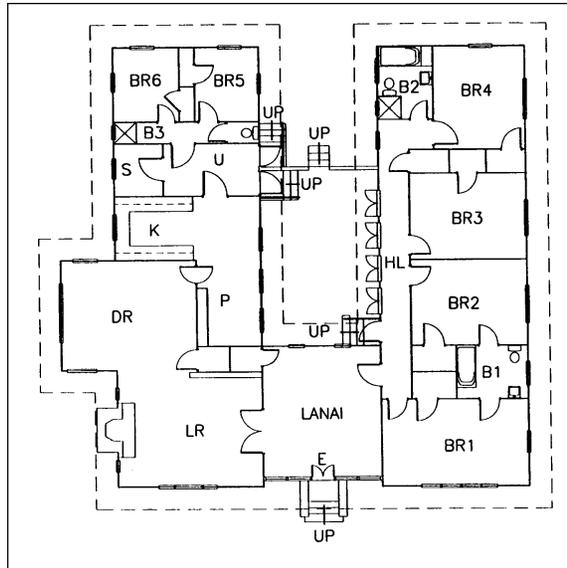
Craftsman center-entry five-bedroom floor plan



*Facility 509 (Craftsman center-entry five-bedroom plan)
Source: Mason Architects, Inc.*

originally Bachelor Officers' Quarters. The symmetrical room layout of this house corresponds with that of the Bachelor Officers' Quarters, which had four two-room suites, each with an adjacent bathroom, and a shared living room space at the central

entry. To convert this to single-family quarters, two of the suite rooms were changed into a kitchen and dining room, one suite room was changed to a family room, and one of the bathrooms was converted into a laundry room.



Craftsman center-entry six-bedroom floor plan



Craftsman Center-entry six bedroom plan
 Source: Mason Architects, Inc.

3-39

Craftsman Center-Entry Six-Bedroom Plan

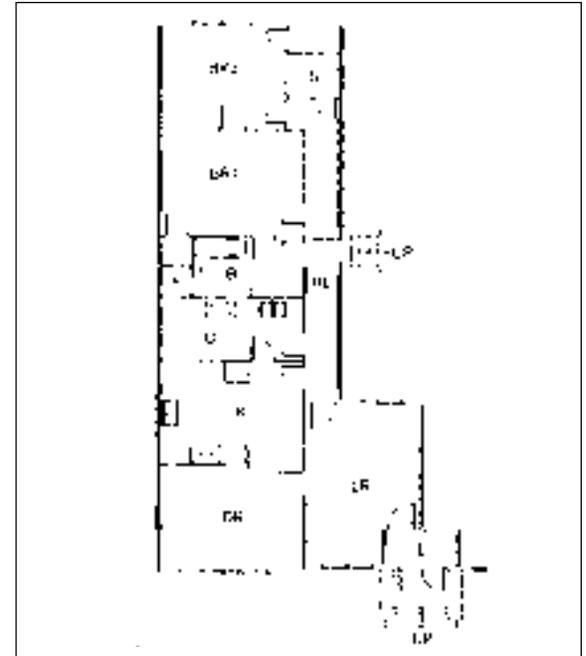
There are 10 houses with the center-entry plan at Schofield Barracks, all in the Canby neighborhood. The front entrance leads into a central lanai, which is screened on the front side and has windows facing the central back courtyard. One side

wing of the house contains the living room, dining room, pantry, kitchen, servant's quarters with two bedrooms, and utility spaces. The living room has a fireplace at the side exterior wall, and the dining room protrudes seven feet from the side of the house.

Four bedrooms and two bathrooms are in the opposite wing. The bedrooms are accessed by a hallway along the courtyard that was originally screened. The central courtyards of some of these houses have been enclosed.



3-40



Craftsman duplex floor plan

Facility 409 (Craftsman duplex plan)

Source: Mason Architects, Inc.

Craftsman Duplex Plan

Schofield Barracks has one building of this type located in the Canby neighborhood. The front central entry leads into a small foyer, which has a door leading into the living room of each unit. From the living room one can access the dining room, which

was originally a bedroom, or a hallway that leads along the central courtyard. This hallway accesses the kitchen, a utility room that was originally a bathroom, two bedrooms, a bathroom, and storage space. The two duplex units are mirror images around the

central courtyard. This building, originally a Bachelor Officers' Quarter, has been modified to create a duplex by dividing the central common living room space and creating an alcove entry with separate entry doors into the two living rooms. One bathroom was converted into a utility room, and two of the rooms on each side became a kitchen and a dining room.

Commanding Officer's House

The area now known as “General’s Loop” was originally designated to house artillery units. When the artillery role was enlarged, their barracks were moved and the generals’ quarters were built. Quarters 227, designated for the senior officer, was first occupied by Brig. Gen. John W. Heard in 1918. This unit is very similar in layout to the six-bedroom central entry design, except that the entry lanai and central courtyard are wider, the dining room does not protrude out from the side of the building, and the pantry is located directly adjacent to the kitchen. Also, the second bathroom in the bedroom wing is located between two bedrooms rather than being accessed from the hallway. The rooms at the back of the wing beyond the kitchen have been slightly modified from their original layout.



*Quarters 227, Commanding Officer's House
Source: Mason Architects, Inc.*

3-41



Quarters 227, Commanding Officer's House, Schofield, c. 1931



*Dining room with built-in cabinets, Commanding Officer's House
Source: Mason Architects, Inc.*



*Living room, Commanding Officer's House
Source: Mason Architects, Inc.*

CHARACTER-DEFINING FEATURES OF CRAFTSMAN DESIGNS

Exterior Features:

- Wood-framed hipped roof.
- Stone or concrete chimneys.
- Exposed rafter ends (no fascia board).
- Lava-rock front wall foundation with small arched openings.
- Lava rock piers and cheekwalls at steps.
- Board-and-batten single-wall construction (12-inch wide vertical boards with wide battens on the exterior).
- Pilasters with pendate or lattice detail.
- Bracket-supported roof extension with paired notched rafters over main entry.
- Wooden or concrete entry stairs with cheekwalls, typically lava rock with a concrete coping.



Concrete front entry steps and cheekwalls
Source: Mason Architects, Inc.



Double-hung windows at Craftsman houses
Source: Mason Architects, Inc.

- Double-hung windows.
- Diamond-patterned wood muntins or leaded glass in the living and dining room windows.
- Screens at entry lanai or in the hallways along the interior courtyard.

Interior Features:

- Wood floors.
- Fireplaces.
- Board-and-batten interior wall and ceiling finish.
- Cased beams at living and dining room ceilings.
- Wall paneling at living and dining rooms.
- Ceiling moldings and baseboards.
- Picture moldings.

- Plate rail with ornate brackets at dining room.
- China closets with star-patterned muntins at dining rooms.
- Original French doors between the lanai and living room.
- Five-panel and single-panel wood interior doors.
- Historic wood shelves or built-in cabinets in pantries.



Typical interior details in Craftsman-style units
Source: David Franzen Photography



Plate rail at dining room
Source: Mason Architects, Inc.

Designs Similar to Craftsman Houses at Schofield Barracks

Fort Kamehameha

The Craftsman-style houses at Fort Kamehameha were completed 1916. There are two house plan types. The 30 buildings of the smaller house plan type are the same as the Schofield corner-entry design. The four larger houses, H-shaped in plan, have a central recessed main entry, four bedrooms, and two servants' rooms with a separate bath. These are the same as the Schofield Commanding Officers' house design (Quarters 227) at Schofield Barracks. These houses differ from the Schofield houses in that they do not have fireplaces.

Luke Field/Ford Island

The Craftsman houses at Ford Island were built in 1922 from plans supplied by the U.S. Army Quartermaster Corps to accommodate the Army Air Corps officers stationed at Luke Field on Ford Island. In 1939, the Army moved its Air Corps to nearby Hickam Field, now known as Hickam Air Force Base, and the Navy acquired these Craftsman-style houses.

The four Craftsman house designs at Ford Island include two duplex designs. Eight of the 15 houses are the same plan as the Schofield corner-entry design. Two houses are a center-entry design that is slightly different than the Schofield and Fort Kamehameha designs. Of the five duplex structures, four are of one design and one has a unique design. All five are different than the Schofield duplex design, but despite the design differences, the materials and architectural details are the same.

Fort Shafter

The Hawaii Ordnance Depot was completed in 1917 on the south side of what was at that time Fort Shafter. The Depot was a separate entity until 1955, when it became part of Fort Shafter. Four Craftsman-style houses were constructed in 1917 to accommodate officers of the Ordnance Depot. The houses were built from two of the standard designs used at the other Oahu Army installations. They appear to have been the same as the Schofield center-entry five-bedroom design and the center-entry six-bedroom design. These houses were demolished in 1999.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Asphalt roof shingles (replaced original wood shingles).
- Jalousie and fixed windows.
- Window A/C units.
- Flush and modern-style doors.
- Modern hardware on doors and cabinets.
- Vinyl flooring or carpet.
- Over painting of woodwork.
- Painting of glass around star muntins on doors or cabinets.
- Modern kitchens and bathrooms.

Schofield Mission Designs

All of the Schofield Mission-style houses were constructed in 1932, at the same time as Wheeler Field (now Wheeler Army Air Field), where all of the buildings were designed in this style. Larger floor plans were used in the Canby neighborhood and a

smaller plan in the housing area between Leilehua and Dickman Roads, at the southeast end of Waianae Avenue. The Canby Mission-style housing area has 34 houses, constructed in rows adjacent to Canby Field, above Quad F. There are 22 houses in the area adjacent to Leilehua Road.

The houses are constructed of concrete blocks covered with stucco. Originally constructed with flat roofs, hipped roofs were later added to deal with the local climate.

Larger Mission-Style Plans

The larger Mission-style plans are U-shaped, with either three or four bedrooms and an additional bedroom added onto the end of one wing. Each house has an entry lanai, living room, dining room, three or four bedrooms, three bathrooms, kitchen, former maid's quarters, pantry and store-rooms. Houses at Wheeler Field with the same plans were designed by Captain George W. Armitage, QMC, who was also in charge of construction at Schofield Barracks from 1911 until WWI. It is likely that these same plans were used for the Schofield houses.

3-44



Larger Mission-style House entry
Source: Mason Architects, Inc.



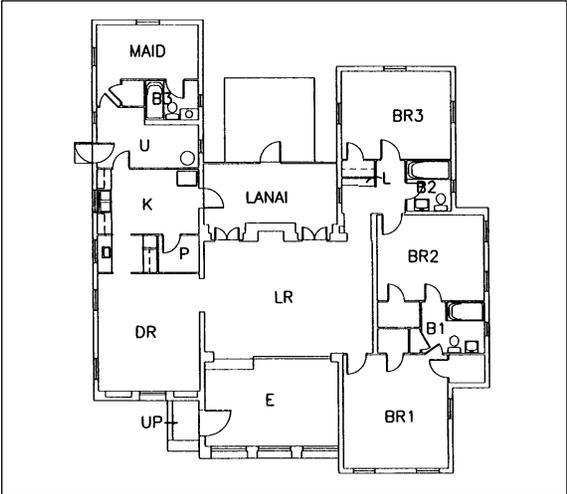
Larger Mission-style House
Source: Mason Architects, Inc.



Large Mission-style House, four-bedroom floor plan



Smaller Mission-style House
Source: Mason Architects, Inc.



Large Mission-style House, three-bedroom floor plan

Smaller Mission-Style Plan

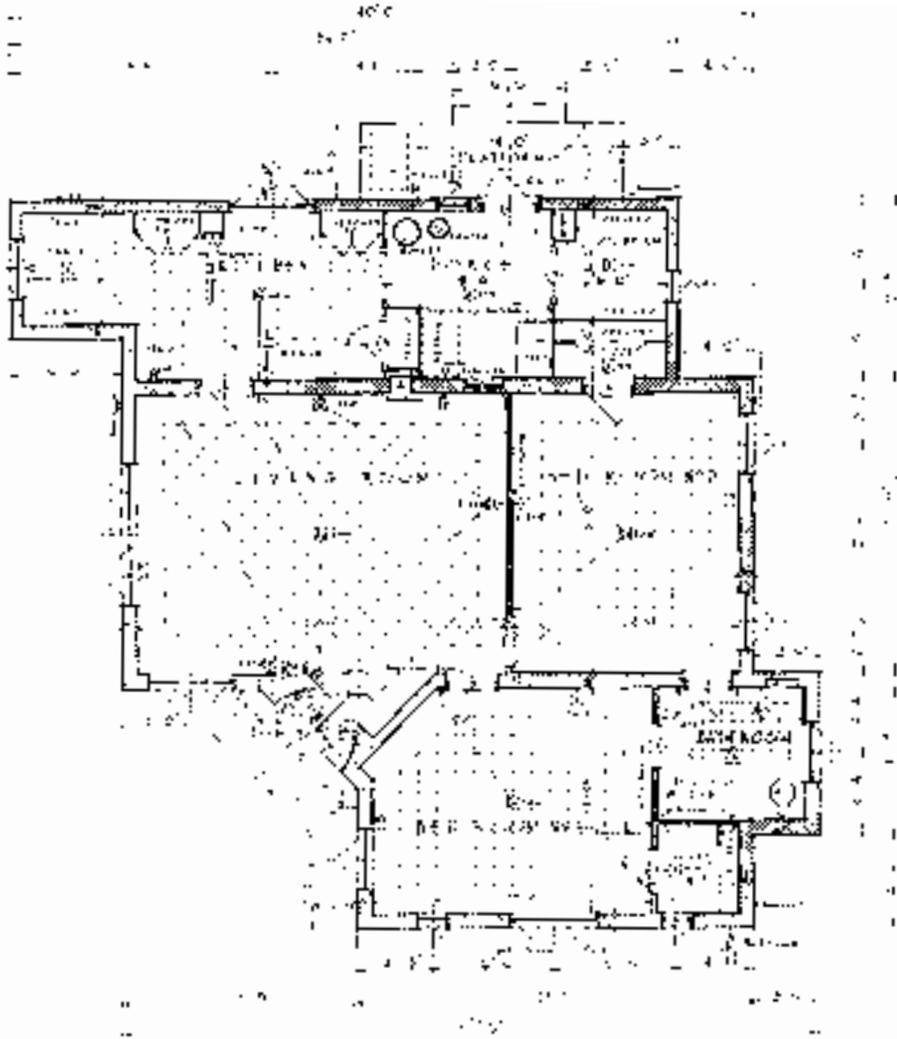
There are 22 of the smaller Mission-style homes at Schofield Barracks. These are laid out in pairs, facing each other. The front entry to each house, a diagonal inset at one front corner, leads into the living room. From the living room, the two bedrooms and kitchen are accessed. The bathroom

is located between and is accessed by the two bedrooms. The bedroom along the street side of the house has two precast decorative concrete grills. The kitchen has a breakfast nook built-in with table and two bench seats. Beyond the kitchen is the service area with laundry and storeroom.

CHARACTER-DEFINING FEATURES OF MISSION DESIGNS

Exterior Features:

- Wood-framed hipped roof.
- Open soffit.
- Shingle roofing.
- Louvered roof vent.
- Concrete block walls with rough plaster finish.
- Decorative concrete designs above main entry door or at front wall.
- Small sloped roof with clay tile over main entry.
- Battered wall at main entry at large Mission-style houses.
- Angled wall at main entry at smaller Mission-style houses.
- Historic wood entry door with vertical scoring.
- Historic French-style door at kitchen entry.
- Historic screen doors.
- Deep-set windows.
- Steel lanai doors.
- Arched doorways.
- Historic door and window hardware.



Smaller Mission-style House original floor plan

Interior Features:

- Acid-stained concrete floors.
- Wrought iron metal railings at entry lanai.
- Fireplaces with copper hood.
- Historic built-in cabinetry.
- Historic light fixtures.
- Historic bathroom tiles, cabinets, and fixtures.
- Plaster wall and ceiling finish.
- Wood baseboards and ceiling moldings.
- Wood panel doors.
- Historic door and window hardware.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie and fixed windows.
- Window A/C units.
- Flush and modern-style doors.
- Modern hardware at historic doors and cabinets.
- Vinyl flooring or carpet.
- Over painting of woodwork.
- Modern kitchens and bathrooms.



*Steel doors at lanai of larger Mission-style house
Source: Mason Architects, Inc.*



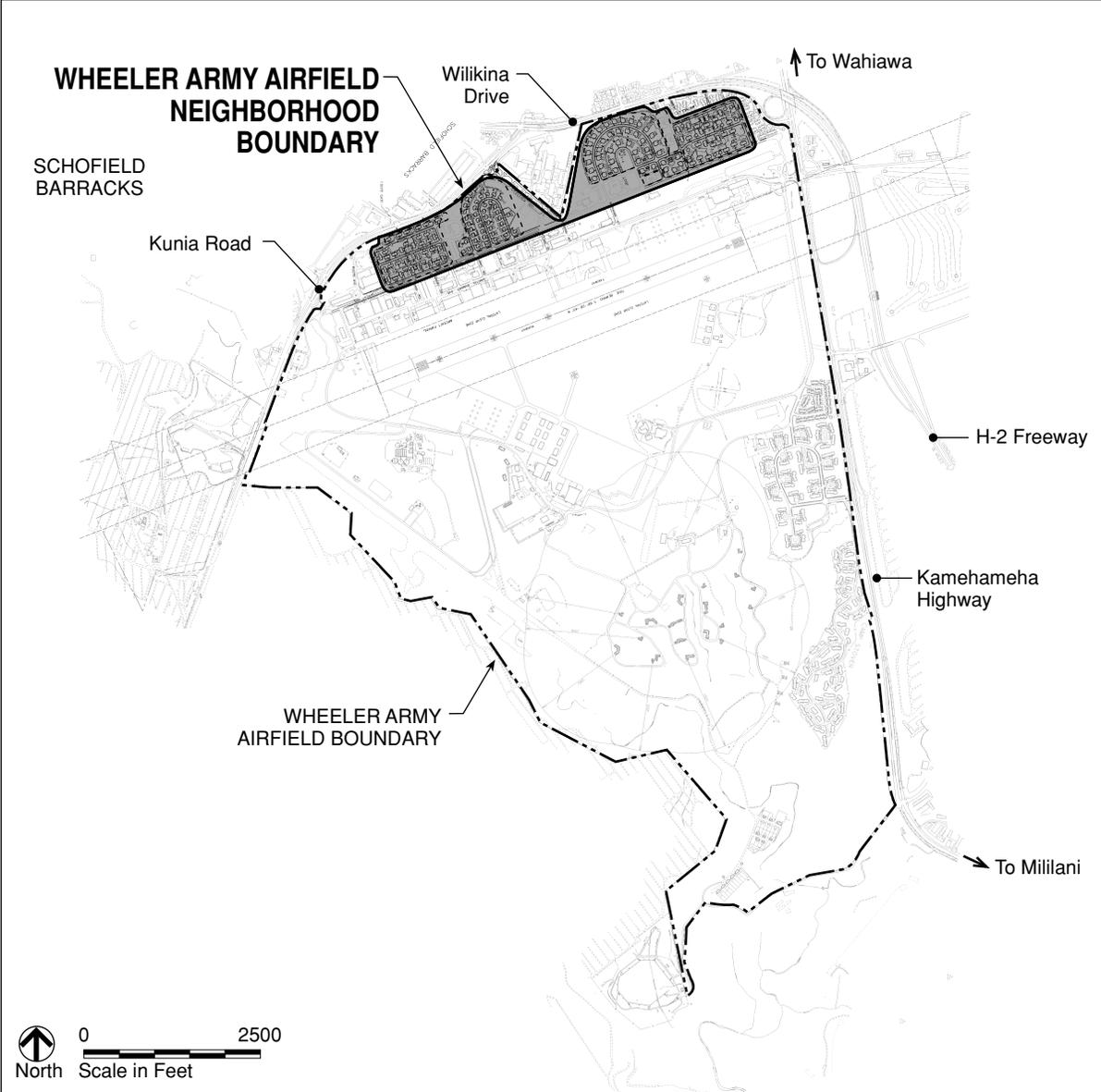
*Larger Mission-style House living room
Source: Mason Architects, Inc.*

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

Wheeler Army Airfield Neighborhood Significance

Wheeler is an excellent example of Army Air Corps base planning. It was built in several major phases: initial base construction in 1932–33, pre-WWII construction, and WWII construction. The layout reflects the linear base design, with all of the original buildings grouped on one side of the field, typical of early air bases. These different phases are apparent in building locations and styles. The initial base construction buildings are all done in the Mission style, pre-WWII housing construction reflects a simpler style, and WWII construction is mostly temporary wood buildings or concrete munitions storage buildings. Buildings of similar function are bunched together. The hangars line the airfield with maintenance and shop buildings nearby, administration buildings are clustered together, and houses are grouped in residential areas. The base is relatively intact, with minor alterations to the buildings as a whole and relatively few structures built after WWII.

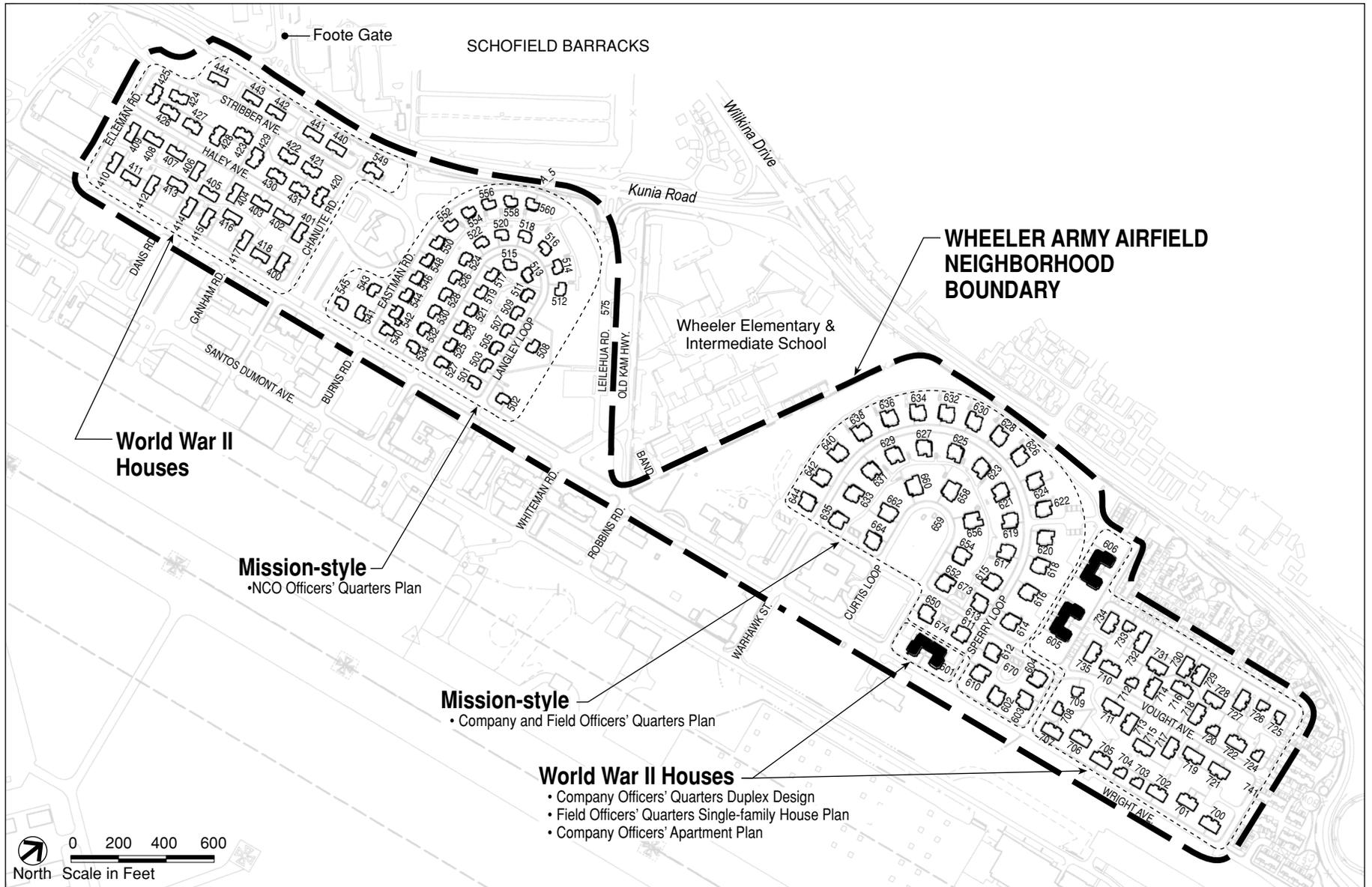
The housing designs show a conscious response to popular regional architectural styles and to the tropical environment. From 1890 until 1917, the Army’s Quartermaster General had produced and used standardized plans throughout the mainland United States. The Army’s standard houses up until 1917 were generally two-story structures. The historic Wheeler houses demonstrate an early acceptance by the Army of one-story houses, at least for posts in warm climates.



3-49

Wheeler Army Airfield

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



3-50

Wheeler Army Airfield neighborhood

The Wheeler neighborhoods also represent the military planning styles of the period. During the 1920s and 1930s, houses were typically clustered in residential loops on picturesque curving streets drawn from “Garden City” concepts of suburban planning. Both of the 1932 housing areas, which reflect these concepts, are in the Mission style with standardized plans, and they are set in residential loops with large front yards along tree-lined streets. Housing areas built in the 1940s are also organized in residential areas but have a grid pattern rather than the residential loop and show the military’s departure from suburban planning styles and Mission-style aesthetics. All of the housing areas have spacious yards and substantial landscaping.

Neighborhood and Base History

Wheeler Field was first constructed to support land-based planes used by the Army at Schofield Barracks. It was officially established on November 11, 1922, and the name was changed from the Hawaiian Divisional Air Service Flying Field to Wheeler Field in honor of Major Sheldon H. Wheeler. Major Wheeler was commander of Luke Field (at Ford Island) from November 4, 1919, until he was killed in an aircraft crash on July 12, 1921. Canvas hangars were quickly constructed at Wheeler Field, and more permanent hangars and storage tanks were completed by June 30, 1923.

During the 1920s and 1930s, Wheeler was the principal Army Air Corps field in Hawaii. A number of historic first flights during this time brought Wheeler Field to public attention, including the first non-stop mainland-to-Hawaii flight on



*Wheeler Field in 1933. Note location of 1923 hangars at right and Schofield Barracks at left.
Source: Hickam Air Force Base History Office, Photo #45*

June 28–29, 1927, by Lieutenants L. J. Maitland and A. F. Hegenberger; and the first flight from the United States to Australia on June 1, 1928, by Charles Kingsford-Smith. On August 17, 1927, approximately 30,000 people gathered at Wheeler

Field to watch the finish of the Dole Derby, the first big air derby across the Pacific. The first solo flight from Hawaii to the Mainland was made on June 1, 1935, by Amelia Earhart Putnam in a Lockheed Vega, flying from Wheeler Field to California.

In 1932 and 1933, 42 units of officers' quarters, 42 units of NCO quarters, a grass landing strip, hangars, technical buildings, four barracks buildings, a fire station, a headquarters building, a parachute building, a photography laboratory building, a radio building, storage buildings, and two Bachelors Quarters buildings were constructed at Wheeler. Most of these structures, almost all of which are still extant, were built in the Mission style, a style frequently used in military construction during this period. The houses were built along residential loops, also common in military planning at this time.

Wheeler Field officially became a separate permanent military post on August 31, 1939. In 1940 and 1941, construction boomed again, with 37 duplex NCO quarters, a control tower, a 600-man barracks building, 36 officers' quarters, and three 10-unit officers' apartment buildings completed. During the summer of 1941, army troops constructed 85 aircraft revetments at Wheeler.

In the early morning of December 7, 1941, Japanese pilots flew from six aircraft carriers toward the island. The first wave of 183 Japanese planes struck its targets at 7:55 a.m. At Wheeler Field, 25 dive bombers aimed at the hangars, dropping approximately 35 bombs. They hit and set fire to Hangars 1 (Facility 110) and 3 (Facility 113) and two storehouses. One bomb struck the barracks occupied by the 6th Pursuit Squadron, inflicting a large number of casualties. The same planes returned to strafe the flight line. In the lull between attacks, six U.S. planes took off from Wheeler. They attacked



Wheeler Mission-style NCO Quarters, c. 1935
Source: Hawaii State Archives

Japanese planes over southeastern Oahu, claiming to have knocked down two of the enemy but losing one of their own. The second wave of 167 Japanese

planes struck Oahu beginning at 8:40 a.m. Again they strafed the field but caused little additional damage. When the attack was over, 83 aircraft at

Wheeler Field had been destroyed, and casualties included 37 men killed, 6 missing, and 53 wounded. Of a total of 231 Hawaiian Army Air Corps aircraft, 153 stationed at Wheeler, only 63 tactical aircraft remained usable after the attack.

Wheeler Field recovered quickly from the attack and played an important role during WWII. In 1944, the Seventh Air Service Command was established at Wheeler. This command provided service and supply for the B-29 bombers in the Marianas, which began their massive raids against Japan that fall.

In 1948, the United States Air Force was created out of Army Air Force units, and on July 1, 1948, Wheeler Field Military Reservation became part of the Air Force. On June 1, 1949, the Pacific Air Command was deactivated and Wheeler was placed in a caretaker status. This status was maintained until 1952, when expansion by the Air Force during the Korean War resulted in the reactivation of Wheeler Air Force Base. The U.S. Army and Air Force continued to share the use of Wheeler, with the Army maintaining helicopters at the field. In 1991, Wheeler was transferred back to Army control and renamed Wheeler Army Airfield.

Major Landscape Features of Neighborhood

The Wheeler Army Airfield layout is a good example of typical airfield design of the 1920s and 30s. Along the linear airfield are air operations structures, and adjacent to those structures are residential and other support facilities. There are two distinct residential layouts present at Wheeler. The first



Landscape at the Wheeler Army Airfield neighborhood
Source: Belt Collins

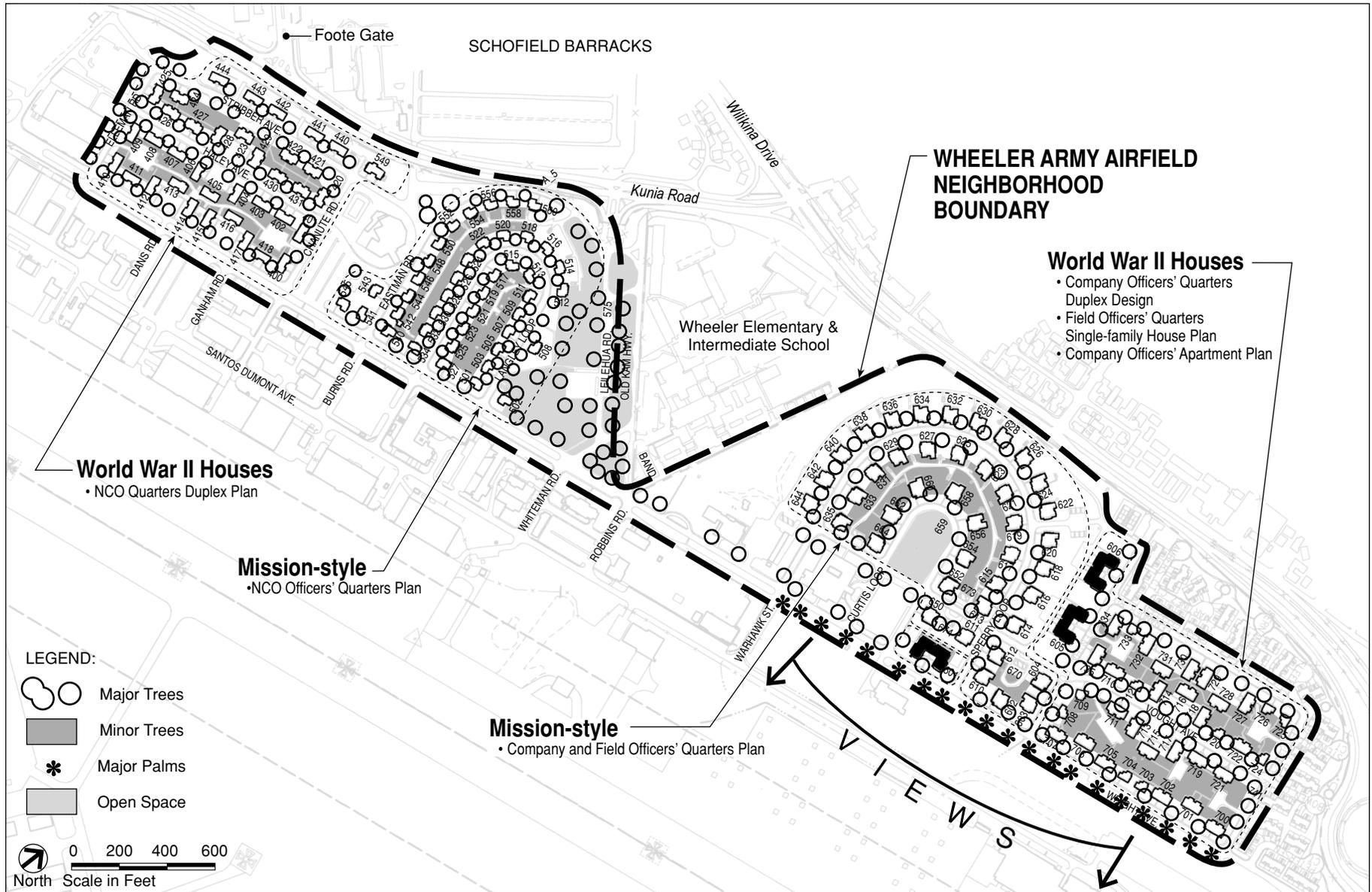
layout represents a “Garden City” planning concept with residential blocks along loop roads, which run along a main axis road.

The second layout follows some of the “Garden City” principles, but the residential blocks are on a grid axis. However, the homes are not on a grid. Some of the homes on the blocks are arranged

so that they create little courtyards along the block. This helps to break up the block and adds to the “Garden City” concept.

All of the streets are tree-lined and homes are set back from the road, creating a larger front yard space. The street trees help to unify the neighborhood. The most notable types of trees are monkeypod,

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



Landscape at Wheeler Army Airfield neighborhood

kamani, jacaranda, banyan, Norfolk Island pine, and tabebuia. Around the dwellings, the foundation plantings, many of a topical palette, help to create a pleasant character for the neighborhoods.

There is no notable open space within the neighborhood other than the center of the loops. Open space exists in the area around the old Kamehameha Highway, which bisects the neighborhoods, and between the neighborhood and the runway. From this latter vantage point, there are clear views of the Waianae Mountain Range.

Major Trees/Palms

- Monkeypod
- Banyan
- Norfolk Island pine
- Date palm
- Silk oak
- Swamp mahogany

Other Trees/Palms

- Kamani
- Royal palm
- Plumeria
- Brassia
- Tabebuia
- Jacaranda

Wheeler Mission-Style House Designs

All of the Wheeler Mission-style houses were constructed in 1932. They were designed by Captain George W. Armitage, QMC, who was also in charge of construction at Schofield Barracks from 1911 until WWI. Captain Armitage had been rec-

ommended to the Army by the architecture firm of McKim, Mead & White. The Wheeler neighborhoods reflect the popular architectural style of the period. They also reflect the regional styles and show how a standardized plan can be modified to adapt to a particular climate. The houses were originally



*Buildings 501–560, NCO Quarters at Wheeler Field, May 1935
Source: Hickam Air Force Base History Office, Photo #26*

built with flat roofs, typical for the Mission style but not practical for the Hawaii climate. Sometime before 1949, hipped roofs were added, providing a much better barrier against the Hawaii heat and rain. The original steel-sash windows were replaced with jalousie windows, which provide excellent ventilation while keeping out rainwater, although they alter the character of the houses.

There are two different floor plans, a smaller plan for NCO Quarters and a larger plan for Officers' Quarters. The houses are constructed of concrete blocks with a rough stucco finish and a decorative design in the concrete wall above the front entry door. The original interior floor finish is acid stained concrete in brown and green tones. The houses were originally constructed with flat roofs; hipped roofs were later added to deal with the local climate. In all of the houses the original metal casement windows have been replaced with jalousie windows, although some of the steel doors remain. The houses appear relatively unaltered, other than minor interior modernizations.

3-56

Facility #	Facility or Design Name	Date
501-528, 530, 532, 534, 540-546, 548, 550, 552, 554, 556, 558, 560	Non-Commissioned Officers' Quarters Plan —Mission Style	1932
602-604, 607-636, 638, 640, 642, 644, 650, 652, 654, 656, 658, 660, 662, 664	Company and Field Officers' Quarters Plan —Mission Style	1932



NCO Mission-style Houses street
Source: Mason Architects, Inc.



Company and Field Officers' Mission-style Houses street
Source: Mason Architects, Inc.

Non-Commissioned Officers' Quarters Plan

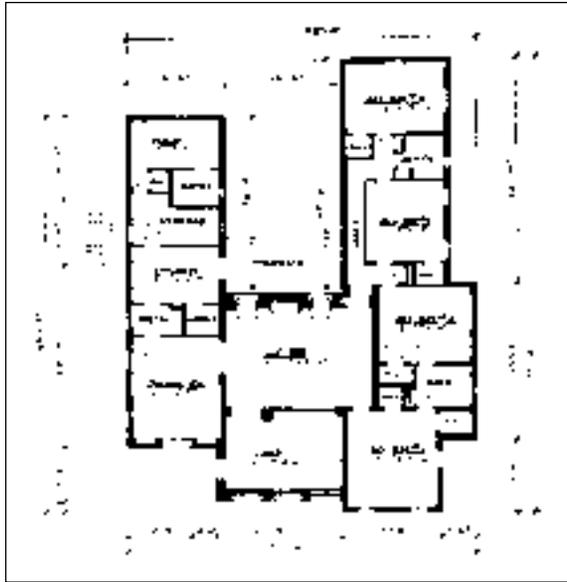
There are 42 houses of the NCO Quarters plan. The plan is a jagged L-shape; the front door leads to an entry lanai. To one side is the living room with a fireplace. The living room directly accesses two bedrooms and the kitchen with a breakfast nook (now a dining area). The laundry and store room are located off the kitchen, and the bathroom is located between the two bedrooms. There is a decorative concrete screen over the front entryway with a scallop-shaped design.



NCO Quarters floor plan

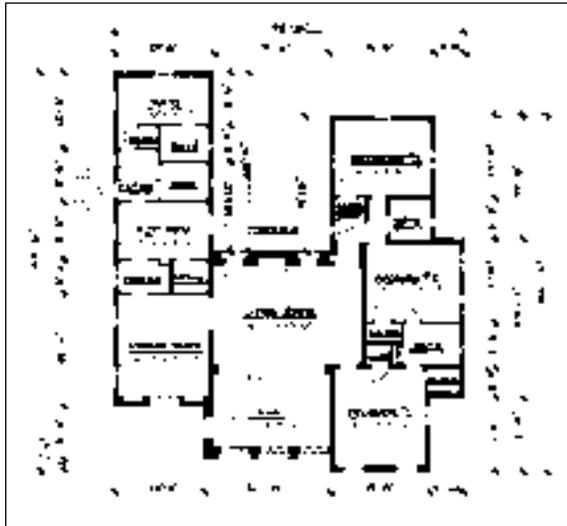


NCO Mission-style House
Source: Mason Architects, Inc.



3-58

Field Officers' Mission-style floor plan



Company Officers' Mission-style floor plan



Company and Field Officers' Mission-style House
Source: Mason Architects, Inc.

Company and Field Officers' Quarters Plans

These concrete block houses have U-shaped plans. The front entry leads into an entry lanai and living room with fireplace. One wing off the central living room contains the dining room, kitchen, pantry, storage rooms, and maid's quarters with a bathroom. The other wing has the bedrooms and bathrooms. The Company Officers' Quarters and Field Officers' Quarters are the same, except that

Company Officers' plan has three bedrooms, and the Field Officers' plan has four. The fourth bedroom is simply added on the end of the bedroom wing, and the bathroom is located between the third and fourth bedroom rather than the second and third bedrooms. The decorative pattern over the front door has a circle and triangular shapes within the half circle of the arched door frame. The courtyard lanai between the wings were enclosed around 1957.

CHARACTER-DEFINING FEATURES OF MISSION DESIGNS

Exterior

- Wood-framed hipped roof over original flat roof.
- Open soffit.
- Shingle roofing.
- Louvered roof vents.
- Concrete block walls with rough plaster finish.



Entry at Mission-style NCO Housing
Source: Mason Architects, Inc.



Entry at Mission-style Officers' Housing
Source: Mason Architects, Inc.

- Decorative concrete designs above main entry door.
- Historic wood entry door with vertical scoring.
- Historic French-style wood door at kitchen entry.
- Historic screen doors.



Arched doorway and historic-style door to kitchen, Mission-style House
Source: Mason Architects, Inc.

- Deep-set windows.
- Steel lanai doors.
- Arched doorways.
- Historic door and window hardware.

Interior

- Acid-stained concrete floors.
- Wrought iron metal railings at entry lanai.
- Fireplaces with copper hood and brick trim.
- Historic built-in cabinetry.
- Historic light fixtures.
- Historic bathroom tiles, cabinets, and fixtures.
- Plaster wall and ceiling finish.
- Wood baseboards and ceiling moldings.
- Wood panel doors.
- Historic door and window hardware.



Acid-stained concrete floor and historic wood doors, Mission-style House

Source: Mason Architects, Inc.



Fireplace with copper hood and brick trim

Source: Mason Architects, Inc.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie and fixed windows.
- Window A/C units.
- Flush and modern style doors.
- Modern hardware on historic doors and cabinets.
- Vinyl flooring or carpet.
- Overpainting of woodwork.
- Modern kitchens and bathrooms.
- Enclosure of back lanai area.

World War II Housing Designs

These single-family and duplex houses were constructed 1940, while the three apartment buildings were built in 1943. The houses were constructed as defense housing; houses of this same design were constructed about the same time at other Army installations on Oahu.

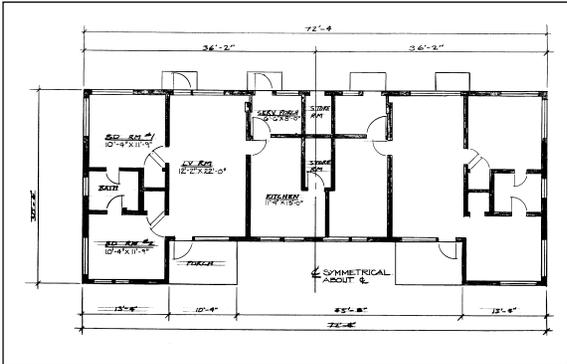
The structures have concrete brick exterior walls and wood frame hipped roofs with asphalt shingle roofing and small louvered gablet vents. The foundations are concrete slab. The interior walls have acid-stained concrete floors and a simple wood base and ceiling molding. Two-story units have wood flooring on the stairs and at the second floor. Original interior doors are single-panel wood doors. The original wood front door has a vertical groove pattern. The original windows are wood double-hung windows with wood-framed screens. The buildings appear basically unaltered, other than a small storage enclosure addition at the back, and the modernization of kitchen and bathroom facilities.

NCO Quarters Duplex Plan

Built in 1940 of concrete blocks, the duplex residences are in a grid plan residential area near the Kamehameha Gate side of the base. The buildings have screened lanai entries at the middle of the front elevation. The front door leads into the living room, which has a fireplace. Two bedrooms and a bathroom are located on the outer side of the living room, and the kitchen, service porch, and storage rooms are located at the middle of the building. Shed-form enclosed porch additions with large screen openings have been added on the rear of each building.

Facility #	Facility or Design Name	Date
400-431, 440-444, 700-702	NCO Quarters Duplex Plan	1940
705-710, 711, 713-719, 721, 722, 727-732, 734, 735	Company Officers' Quarters Duplex Design	1940
703, 704, 708, 709, 712, 720, 724-726, 733	Field Officers' Quarters Single-Family House Plan	1940
601, 605, 606	Company Officers' Apartment Plan	1943

Sliding doors lead from the living room out to this back lanai. The two duplex unit plans are very similar, but in this plan the front entry leads straight into the living room rather than entering into the side of the living room. Also in the NCO plan the bedrooms are entered directly from the living room, while the Company Officers' Quarters plans have a hallway accessing the bedrooms. The fireplace in this plan is located in the back corner of the living room, and originally the kitchen had a built-in breakfast nook.



NCO Quarters Duplex floor plan

Company Officers' Quarters Duplex Plan

This duplex plan is nearly identical to the NCO Quarters plan, except that the main entry leads from the front lanai into the side of the living room. Also this plan has a hallway that accesses the two bedrooms and the bathroom, while at the NCO Quarters plan the bedrooms are accessed directly from the living room, and the bathroom is located between and accessed through the two bedrooms. The fireplace is located in the interior wall rather than in the back corner. In these units, there is a built in shelf/partial height wall separating the dining area from the living room.

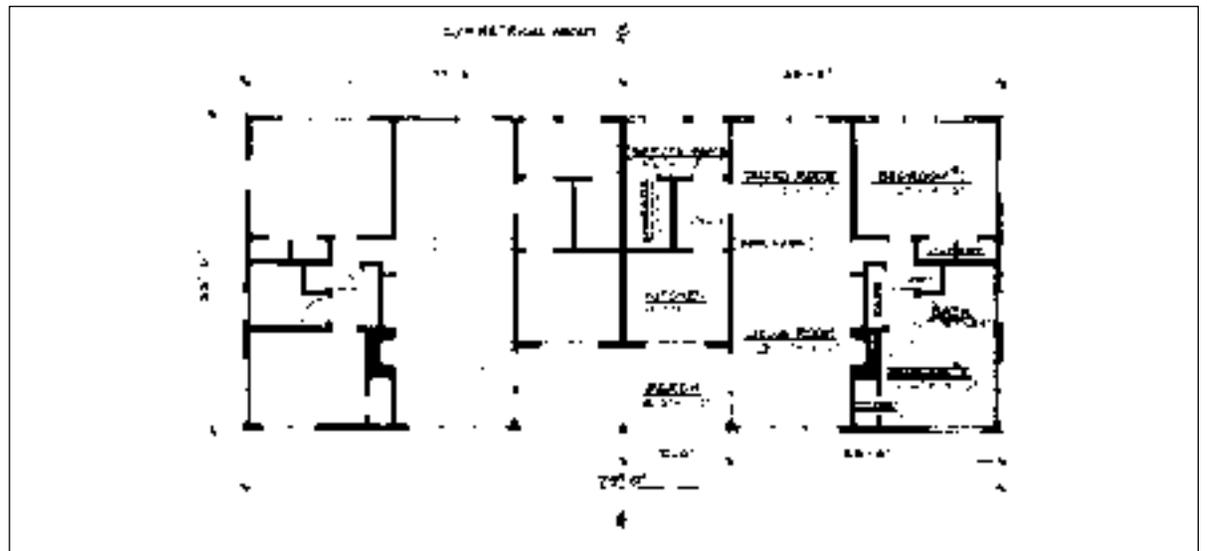


World War II Company Officers' Quarters Duplex
Source: Mason Architects, Inc.

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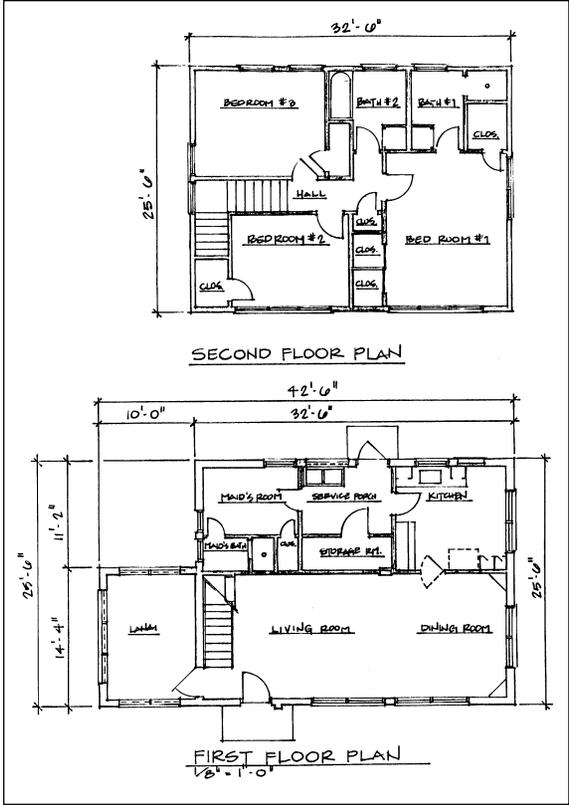
World War II Company Officers' Quarters Duplex living room
Source: Mason Architects, Inc.



Company Officers' Quarters Duplex floor plan

**Field Officers' Quarters
Single-Family House Plan**

These single-family, two-story dwellings are intermixed with the Company Officers' duplex housing. The buildings have hipped roofs at both the two-story and one story portions of the building; the lower roof extends to cover the front entry. The front entry leads into a large front room, which



Field Officers' Quarters Single-family house floor plans



Field Officers Quarters Single-family House
Source: Mason Architects, Inc.

contains the living room, dining room, and the stair to the second floor. A lanai is located to the side beyond the stair. Beyond the dining room are the kitchen, service porch, storage, and former maid's

quarters with a bathroom. The second floor has three bedrooms and two bathrooms. A small shed-roofed storage room has been added at the rear of each building.



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View of World War II Company Officers' Apartment
Source: Mason Architects, Inc.

World War II Company Officers' Apartment entry
Source: Mason Architects, Inc.

Company Officers' Apartment Plan

Constructed in 1943, these apartment buildings at Wheeler Army Airfield are identical to several at Hickam Air Force Base, which were built three years earlier. These two-story apartment buildings have U-shaped plans. The apartment entries are located on the first floor in the center courtyard

under a covered walkway. The walkway awning roof has doubled wood columns. The exterior wall has decorative concrete grill vents at the second floor, which ventilate a storage room. Originally each unit had a living room, kitchen, and dining area on the first floor, and the four smaller center units had one upstairs bedroom and a bathroom, while the larger

units at the building wings had two bedrooms and one bathroom. The four center units have been modified to combine two units into one with one of the kitchens has been removed and each unit now having two bedrooms upstairs. One-story lanai additions with a shed form were added at the outer three sides around 1964.



World War II Company Officers' Apartment living room and stairway
 Source: Mason Architects, Inc.



World War II Company Officers' Apartment second floor hall
 Source: Mason Architects, Inc.



World War II unit, acid-stained concrete floor
 Source: Mason Architects, Inc.



World War II unit, historic light fixture at ceiling
 Source: Mason Architects, Inc.

CHARACTER-DEFINING FEATURES OF WORLD WAR II DESIGNS

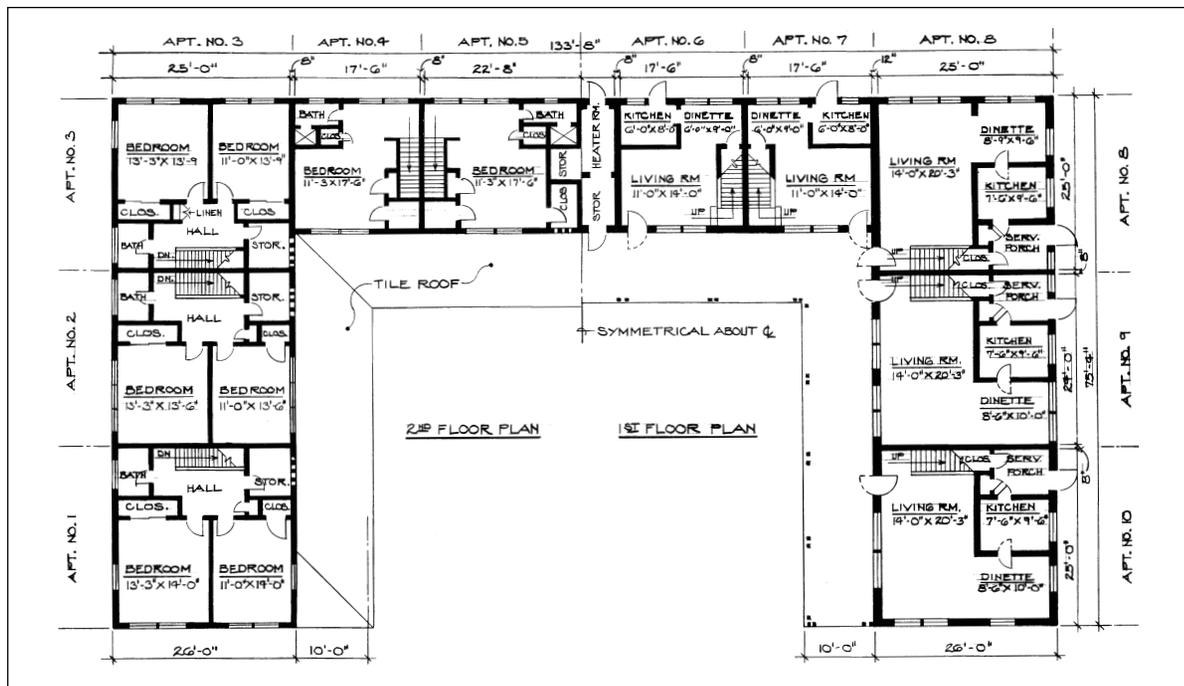
Exterior

- Wood-framed hipped roof.
- Open soffit.
- Shingle roofing.
- Louvered gablet roof vents.
- Concrete block walls.
- Historic wood entry door with vertical scoring.
- Historic wood and glass exterior doors.
- Historic screen doors.
- Historic door and window hardware.
- Vent openings at exterior walls (apartment units).

Interior

- Acid-stained concrete floors.
- Wood flooring at second floors.
- Fireplaces.
- Historic built-in cabinetry and shelves.
- Historic light fixtures.
- Historic bathroom tiles, cabinets, and fixtures.

- Plaster wall and ceiling finish.
- Wood baseboards and ceiling moldings.
- Historic wood panel doors.
- Historic door and window hardware.



World War II Company Officers' Apartment floor plan

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie and fixed windows.
- Window A/C units.
- Flush and modern style doors.
- Modern hardware at historic doors and cabinets.
- Vinyl flooring or carpet.
- Overpainting of woodwork.
- Modern kitchens and bathrooms.
- Addition of back enclosed lanai area.

Designs Similar to World War II Housing at Wheeler Army Airfield

In the period just prior to, during, and immediately following WWII, several housing designs were used at multiple Army bases around Oahu. These included single-family, duplex, and apartment style houses.

Fort Shafter

Duplex and single-family units were constructed at Fort Shafter between 1941 and 1943. These are three structures of the single-family plan and 16 buildings with duplex units. The duplex

structures utilize the same design as Wheeler's NCO Duplex Quarters.

Hickam Air Force Base

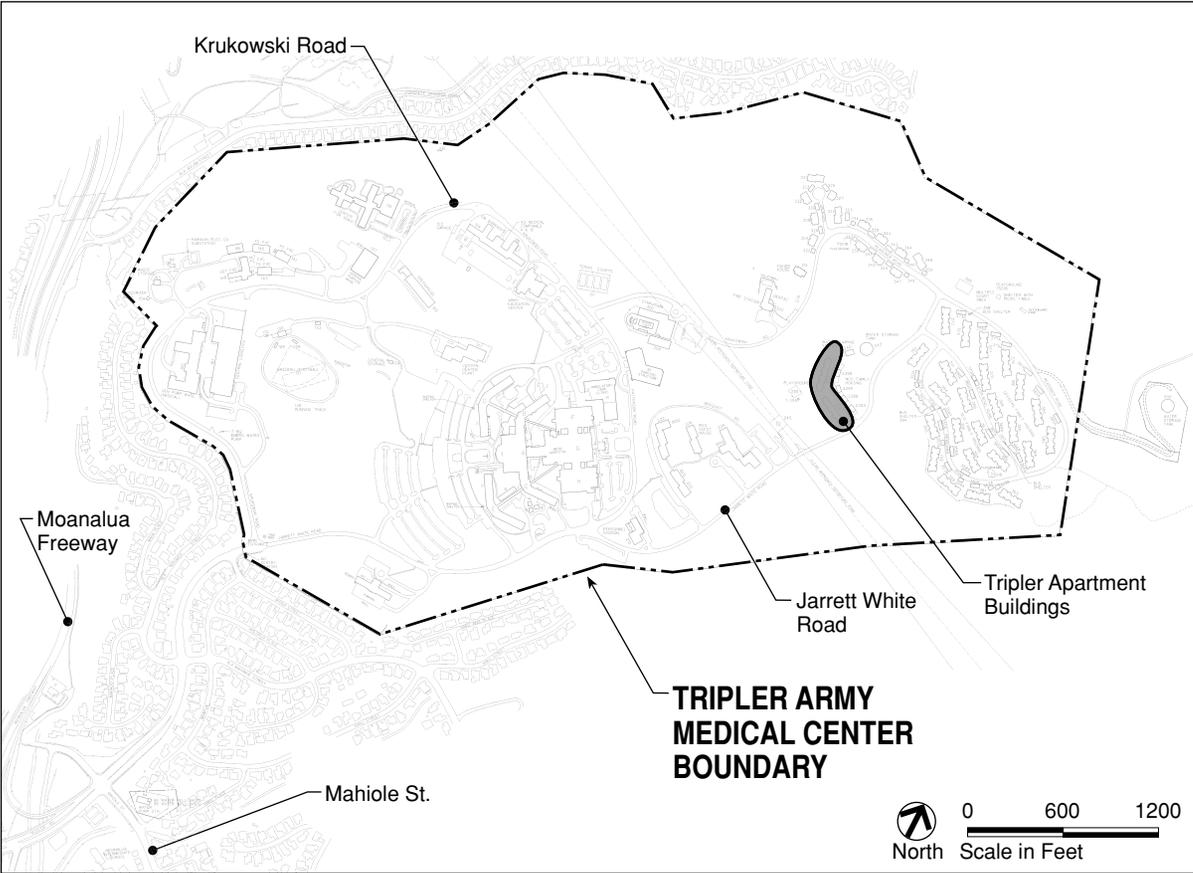
Houses of the WWII style built at Hickam were completed in 1941. The NCO Quarters duplexes constructed at Wheeler are the same as Hickam's NCO duplex plan 6, which was also used at Fort Shafter. The Wheeler Company Officers' duplex is the same as Hickam's Officers' duplex plan O. The single-family house constructed at Wheeler in 1940 is the same as Hickam's Officers' Quarters house plan M. The three apartment buildings constructed at Wheeler are identical to Hickam's Officers' apartment buildings.

Schofield Barracks

Nineteen buildings were constructed at Schofield Barracks in 1948. These units were built at the west side of the base on two concentric horse-shoe-shaped loops around a central open green. There were four building plans used, two single-family plans and two duplex plans. It appears from photographs that the two duplex plans are the same as those constructed during WWII at Wheeler, Fort Shafter, and Hickam. The single-family houses appear to be a different plan than those used at the other Army bases. These buildings have been demolished.

Tripler Army Medical Center Neighborhood Significance

Completed in 1948, Tripler Hospital was the largest Army medical facility of its time and incorporated numerous architectural and structural innovations. Among the more noteworthy of these were structurally isolated units for protection against earthquakes, vertical rather than horizontal movement of interior traffic, and the first pneumatic tube system installed in an Army hospital. The hospital, designed by the architecture firm of York and Sawyer as a group of open pavilions to take advantage of natural light and ventilation, steps down the slope to maximize the spectacular views. Due to its size, design, prominent location, and eye-catching pink color, this structure is an Oahu landmark. Even with the major additions and interior alterations completed in the late 1980s, Tripler's architectural innovations and important role in military history establish it as a historically significant site. The two 1951 apartment structures are part of the Tripler complex, providing housing for hospital employees. They reflect the needed buildup of hospital staff during the Korean conflict of the 1950s. The buildings blend with the layout and style of the hospital complex and remain relatively unaltered.



Tripler Army Medical Center vicinity

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Tripler Army Medical Center

Neighborhood History

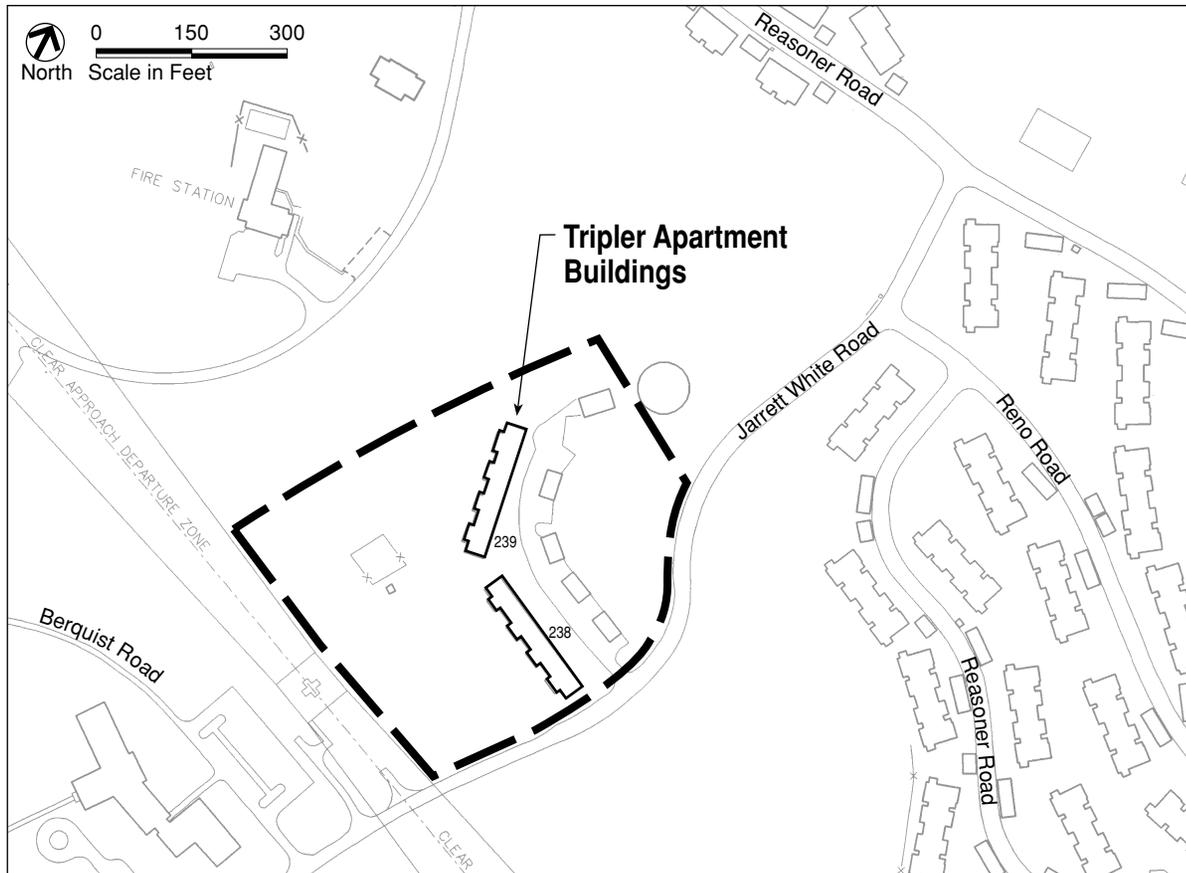
The first Tripler Hospital was constructed at Fort Shafter. Completed between 1907 and 1909, the original grouping of hospital buildings consisted of an administrative office, mess hall, wards, and an operating room. The hospital was designated Base

Hospital on June 20, 1912, and Tripler General Hospital on June 26, 1920, in honor of B.G. Charles Stuart Tripler (1806–1866), Medical Director of the Army of the Potomac during the Civil War and author of the Manual of the Medical Officer of the United States Army.

The remainder of the main hospital facility was substantially completed by 1919. During WWII, 1,800–1,900 patients from all branches of the armed forces were cared for daily. The first casualties were victims of the Japanese attack on Pearl Harbor and other Oahu installations. Casualties later came by airplane and hospital ship from the Solomons, Marianas, Philippines, and other Pacific battle-grounds of the war. Over the years, the hospital was expanded through the addition of one-story barracks-type buildings. The Fort Shafter hospital buildings were demolished during construction of the H-1 freeway in 1958–1960.

Plans for the new Tripler were drawn in 1942. Construction of wings A through E on Moanalua Ridge began in 1944, but construction was continually delayed. The buildings were finally completed in 1948 at a cost of \$41 million. At this time, Tripler was the tallest structure in the Pacific, encompassing 1.6 million square feet. In 1949, the hospital was expanded with the addition of a gymnasium, swimming pool, theater, and patients' recreation building.

During the 1950s, more than 60,000 Korean conflict air evacuees received medical care at Tripler. Almost all of the wounded servicemen evacuated from the battle zone stopped in Hawaii between flights. Battle casualties, often numbering in the hundreds, passed through Tripler's wards daily. In 1953, the first U.S. prisoners of war were air evacuated from Korea to Tripler, returning home after months, and sometimes years, of Communist internment.



Tripler Army Medical Center neighborhood

Housing facilities at Tripler were also expanded during this time, with two eight-unit apartment-style family quarters constructed on the hillside above the hospital in 1951. Tripler's post housing facilities were increased more than 10-fold in 1957,

with the addition of 164 new units under the Capehart Military Housing Act.

In 1961, Tripler U.S. Army Hospital became known as U.S. Army Tripler General Hospital, and in 1964, the name was changed again to Tripler

Army Medical Center. In 1973, Vietnam prisoners of war arrived at Tripler for treatment and care. In 1992, the construction contract began for Hawaii's first Veterans Administration Medical Center co-located at Tripler. The Spark Matsunaga Department of Veterans Affairs Medical Center is now located in the E Wing. Today Tripler continues as one of the most prominent hospitals in the Pacific, serving all branches of the U.S. military.

Major Landscape Features of Neighborhood

Tripler Hospital's historic neighborhood consists of two two-story apartment buildings located just above the hospital. This neighborhood is situated on a grassy slope near the hospital's helipad. The two buildings are located just off of Jarrett White Road, which is the main access to the hospital. Each of the buildings has a number of covered carports located along the neighborhood's driveway, which serves as both the ingress and egress for the neighborhood.

There is no notable uniform foundation planting around the buildings. The individual occupants have modified their yards to suit their own tastes. The small number of large trees around the buildings include banyan, brassiaia, mango, and a few coconuts.

Because of the neighborhood's proximity to the helipad, the area fronting the apartments is an open grass field. The area above the apartments is also an open grass hill. The perimeter of the neighborhood opposite the ingress and egress is a sloped area falling away from the apartments with mostly

haole koa scrub brush. This natural vegetated area is similar to the area along Jarrett White Road. Due to the helipad's location, the neighborhood has a 180-degree unobstructed view of Honolulu from Diamond Head to the Ewa plain.

Major Trees/Palms

- Banyan
- Norfolk Island pine
- Mango
- Coconut

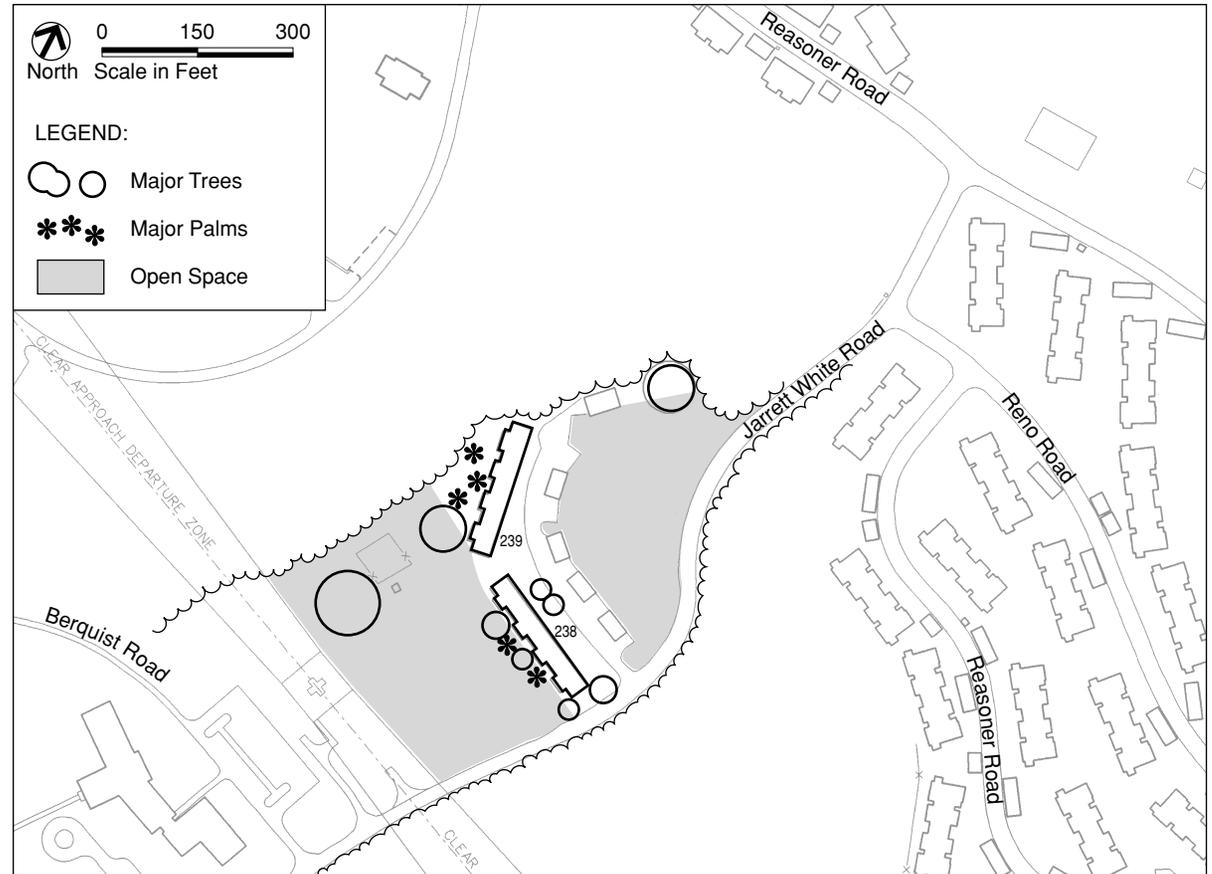
Other Trees

- Plumeria
- Brassia
- African tulip

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Entry/egress into Tripler Army Medical Center neighborhood
Source: Belt Collins



Landscape at Tripler Army Medical Center

Tripler Eight-Unit Apartment Building Design

These two buildings were constructed as family housing in 1951. They are located on a grassy sloped site north of the hospital. The two-story buildings are characterized by International-style simplicity and unadorned lines. One building (Facility 238) is constructed on a level foundation, while the other building (Facility 239) is staggered in four sections.

The two buildings have concrete slab foundations and stuccoed concrete block exterior walls. A flat concrete roof extends over the first floor windows. A similar roof was originally planned for the top of the building but was changed to a hipped roof with ceramic tile roofing, which blends with the architecture of other buildings in the complex. All of the original wood awning windows have been replaced with jalousies, although some of the original wood entry doors remain.

The interior walls are wood framed. The original interior doors are wood two-panel and remain in nearly all locations. Other interior details are simple. The kitchen and bathrooms have been modernized, but the units are otherwise relatively unaltered.

CHARACTER-DEFINING FEATURES

Exterior Features:

- Wood-framed hipped roof.
- Flat roof over entry doors and first floor windows.
- Ceramic tile roofing.
- Concrete block walls with openings at entry.

Facility #	Facility or Design Name	Date
238, 239	Eight-unit Apartment Building	1951



*Facility 238
Source: Mason Architects, Inc.*



*Facility 239
Source: Mason Architects, Inc.*



*Hipped roof and flat roof over windows
Source: Mason Architects, Inc.*



Front entry
Source: Mason Architects, Inc.

- Concrete block sills.
- Flat wall surface with no door or window casings.

Interior Features:

- Wood floors at second floor.
- Two-panel wood doors.
- Original bronze door hardware.
- Wood baseboard.
- Wood ceiling molding.



Entry hall and stair with wood railing
Source: Mason Architects, Inc.

- Historic light fixtures.
 - Wood handrail at stair.
- ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER**
- Jalousie and fixed windows.
 - Lanai shed additions.
 - Electrical and other utility lines on exterior walls.
 - Flush and modern style doors.



Living room
Source: Mason Architects, Inc.



Bedroom with wood flooring and original doors
Source: Mason Architects, Inc.

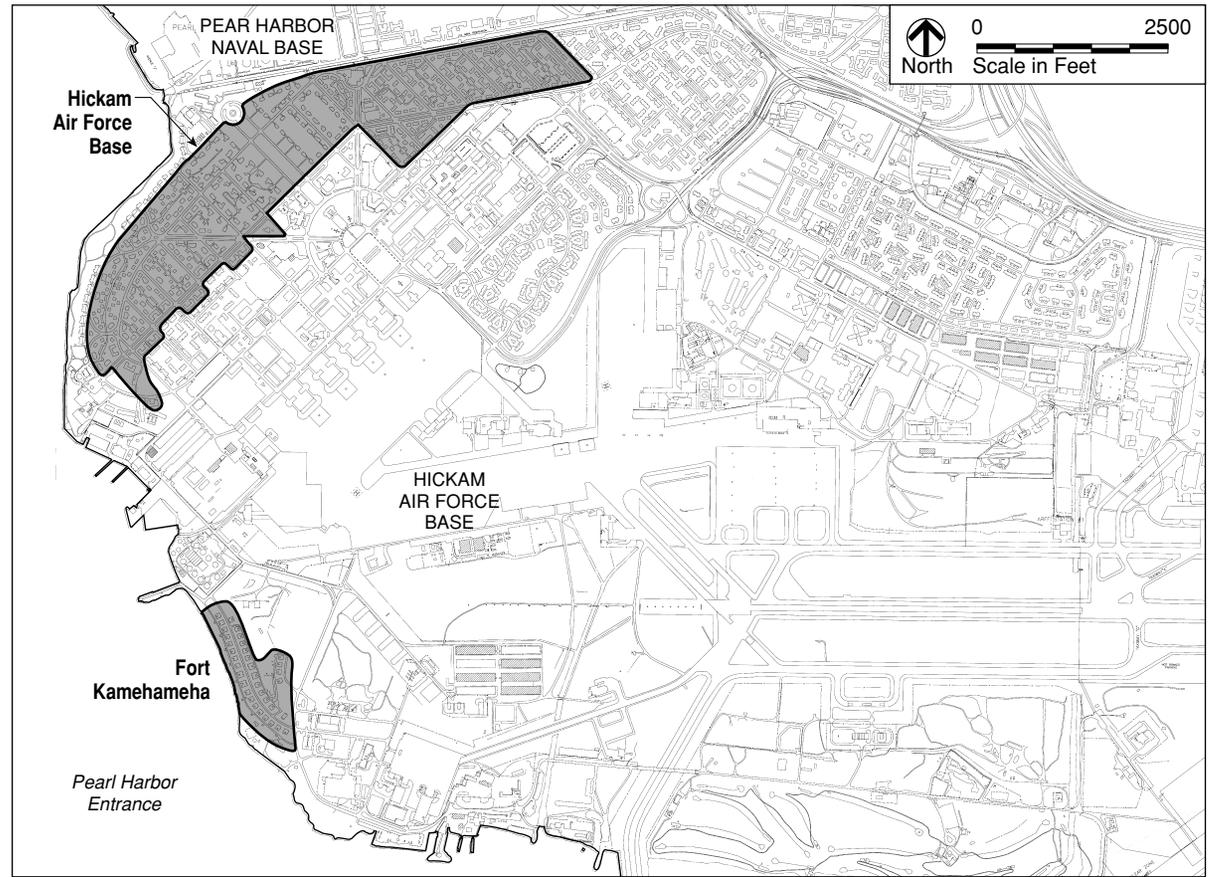
- Modern hardware on doors and cabinets.
- Vinyl flooring or carpet over wood floors.
- Modern kitchens and bathrooms.
- Modern light fixtures.

Chapter 4

Historic Neighborhoods: Air Force

The Army Air Corps, created within the Army Signal Corps in 1914, became a separate service, called the Air Force, in 1947. On Oahu, Army airfields were developed in 1919 at Luke Field on Ford Island in Pearl Harbor, in 1932 at Wheeler Field adjacent to Schofield Barracks, and in 1935 at Hickam Field. Ford Island, originally established as a joint Army and Navy field, was turned over to the Navy when the Army Air Corps units moved to Hickam Field (see Chapter 5 for a description of the Ford Island neighborhood). At Hickam, housing was constructed in two phases between 1937–1938 and 1939–1941 on the northwest side of the base. Officer and duplex housing was constructed in single-family, duplex, and apartment-style buildings. There is a consistency of architectural style and materials used in all of these houses, as they were designed in the same period and were part of the overall base architectural plan.

Fort Kamehameha was established in 1911 on the east side of the Pearl Harbor channel as an Army coastal defense installation. Craftsman-style houses, built in 1916 as Officer Quarters Housing on a curving street along the beach, are the only remaining historic housing at the installation. Fort Kamehameha is now controlled by the Air Force, and Wheeler is an Army Air Field.



Air Force vicinity map

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

Hickam Air Force Base Neighborhood Significance

Hickam Air Force Base is significant due to its association with the December 7, 1941, attack by the Japanese. It is also significant as Hawaii's largest Air Force Base. At the time of its completion, it was the nation's largest Army Air Field. Hickam's military importance at the beginning of WWII is evident by the intensity and persistence of the December 7th attack on Hickam Field. Damage from this assault is still evident on some base buildings.

Hickam is also significant as an excellent example of base planning. Rarely have military bases been designed with such an integration of layout, architecture, and landscaping, particularly using the classical form of major and minor axes to organize the areas. The integration of city planning methods into the design of Hickam Field is evident. Incorporation of period and regional architectural styles into design of the buildings is prominent.

The houses have a Hawaiian-tropical style, with double-pitched hipped roofs, exposed rafter ends, decorative vent details, and acid-stained concrete floors. Houses are one- or two-story, with varying sizes and embellishments reflecting the ranked military society. The other buildings at Hickam are mostly of Art Deco design and detailing. Popular in the United States in the 1920s and 1930s, the Art Deco style is well expressed here with geometric and avian ornamentation. Most of the structures at Hickam Air Force Base are functioning in their original capacities, serving as excellent examples of



Hickam housing neighborhood
Source: Mason Architects, Inc.

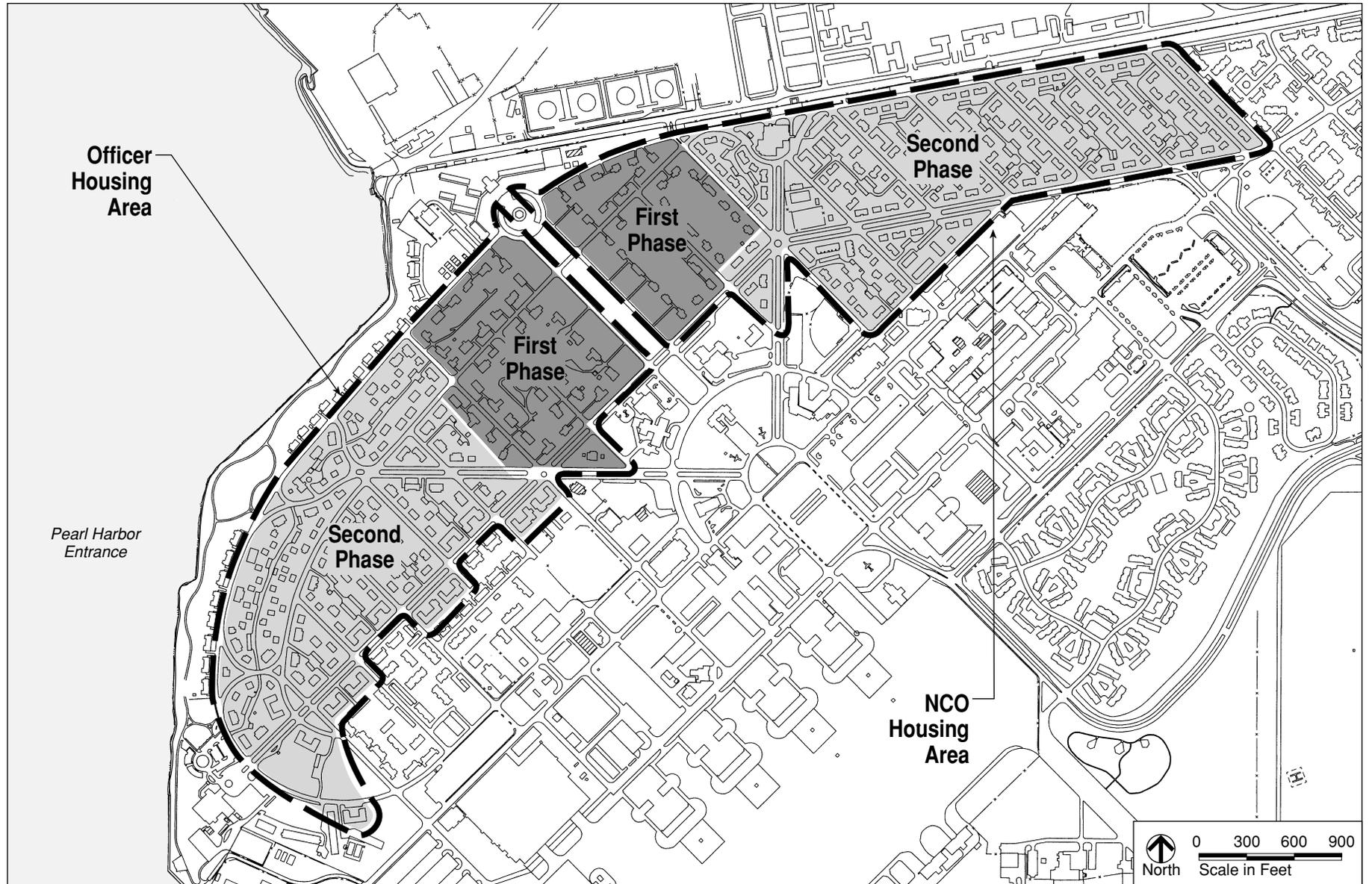
planning and architectural styles from that period, and maintaining unity as a historic residential district.

Neighborhood History

By World War I, the Territory of Hawaii was firmly established as being vital to the defense of

the western coast of the United States. Army coast defenses were developed on Oahu, and the areas around Pearl Harbor were heavily fortified. Ford Island had been shared since 1919 by the Army and Navy for aviation activities. Overcrowding

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



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Hickam Air Force Base neighborhood



Hickam Field entry gate, c. 1938
 Source: U.S. Army Museum of Hawaii

eventually prompted the Army to find an area for a new base, leaving the Navy with full control over the installation. The Army purchased land adjacent to Fort Kamehameha and Pearl Harbor, and the new airfield was dedicated on May 31, 1935. It was named in honor of Lieutenant Colonel Horace Meek Hickam, a distinguished aviation pioneer who was killed in an aircraft accident in November 1934 at Fort Crockett in Galveston, Texas.

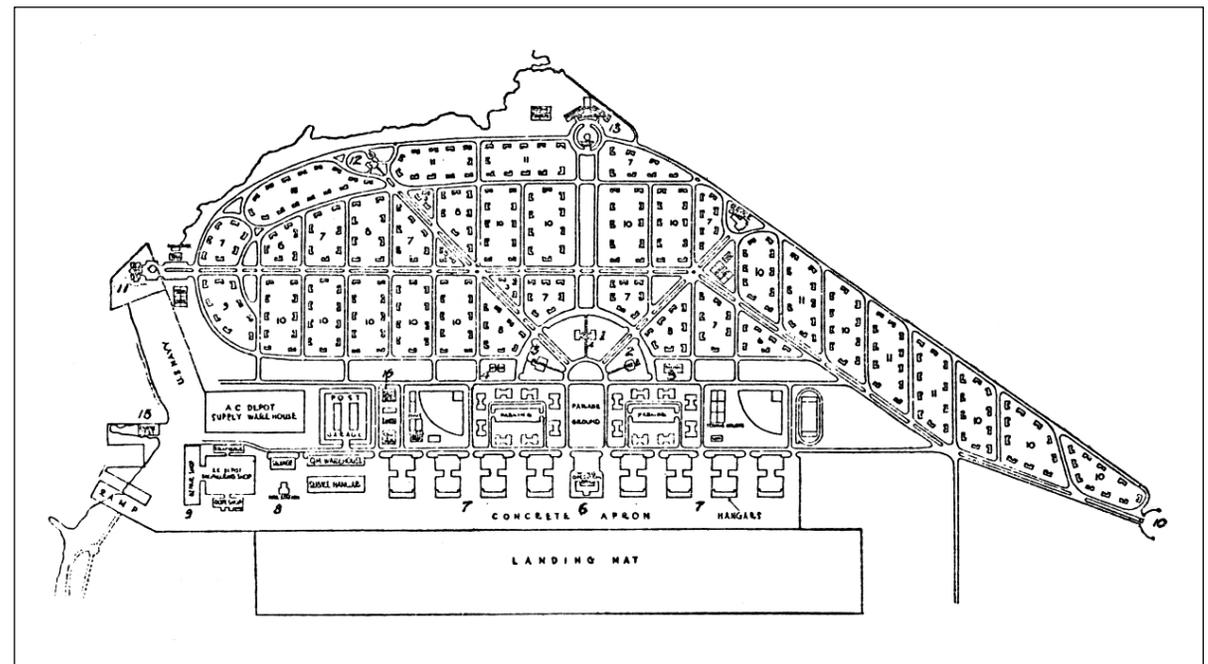
Captain Howard B. Nurse, who came to Hawaii after completing the design of Hamilton Field in California, planned, designed, and supervised the construction of Hickam Field. Captain Nurse's goal was to design a base that operated functionally and efficiently in terms of military requirements, and also reflected the architecture of the period and of the region, providing an attractive and comfortable place for residents. The base was designed with a master plan, laying out areas for housing, administration, and technical functions. Areas were organized around major and minor axes, with boulevards in

public areas and narrower streets in residential areas. This design was far advanced in planning aspects relative to previous military base designs.

Captain John A. Hunt took over Captain Nurse's duties as Construction Quartermaster in July 1938, when Captain Nurse left Hawaii to design additional bases on the U.S. mainland. All drawings for buildings (except the purely technical buildings) were done under the supervision of Jozef B.A. Van Oort, the chief architect at Hickam under Captain Hunt. Buildings at Hickam were designed with an Art Deco and/or a Hawaiian/tropi-

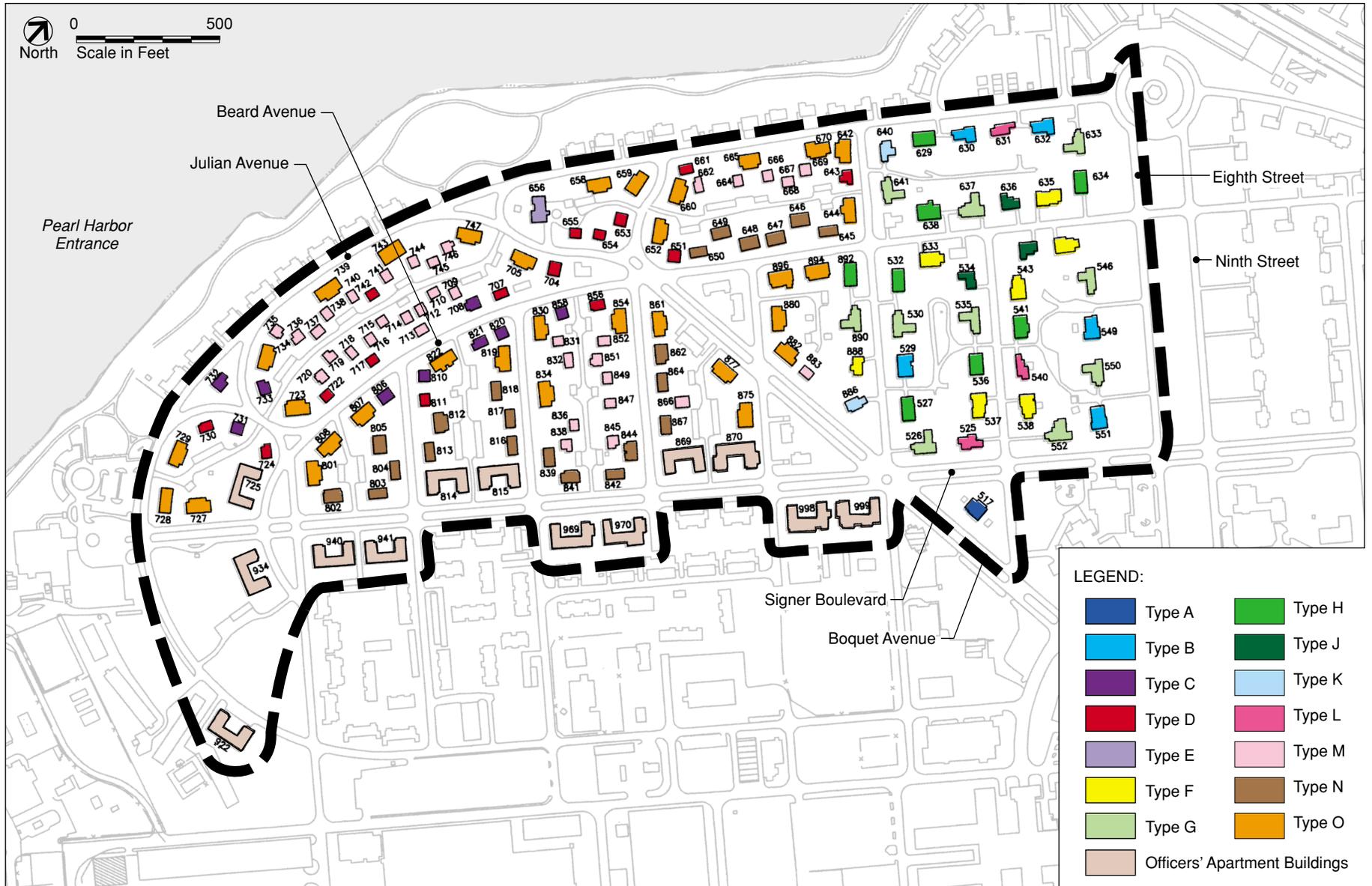
cal style of architecture. The housing areas were designed with the "Garden City" concept common in military planning at this time, using residential loops and winding streets. Residences were designed in a Hawaiian/tropical style to integrate with the environment and styles of Hawaii.

By July 1939, the following were completed: operations building, water tower, railroad, dock and boathouse, magazines, entrance gateway, six hangars, radio building, wing operations building, 39 Officers' Quarters, 42 NCOs' Quarters, Quartermaster Corps warehouse, Quartermaster Corps



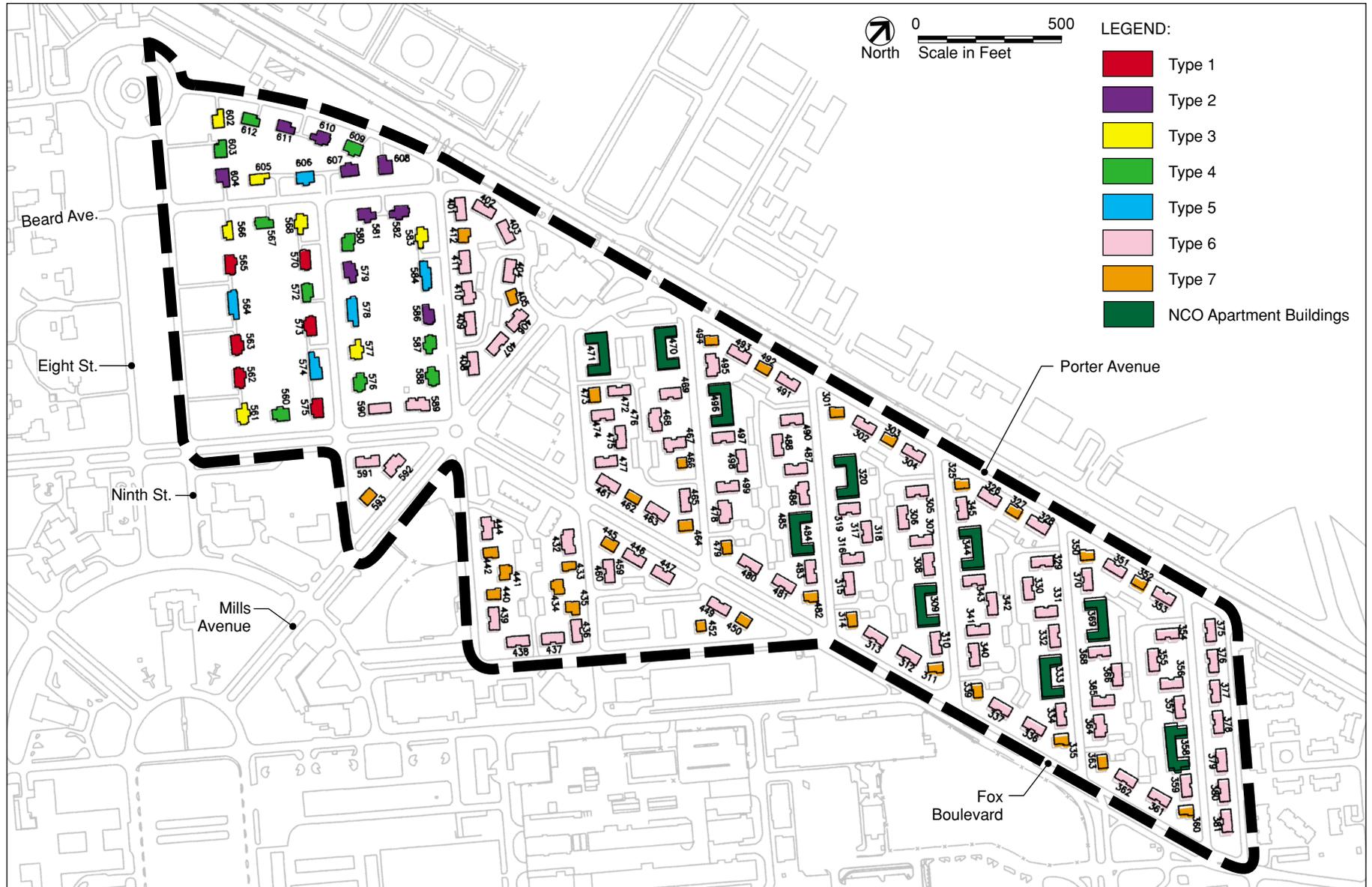
Original layout map of Hickam Field
 Source: 15th Air Base Wing History Office

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



4-6

Officers' Housing area



NCO Housing area

maintenance building, Signal Corps Wing headquarters building, Quartermaster Corps garage, barracks, fire station and guardhouse, and various other support structures and utilities. Other buildings completed by 1941 included a service club, officers' mess building, post exchange, Bachelor Officers' Quarters, administration building, infirmary, additional housing units, apartments, and barracks, photo laboratory, warehouses, engineering shops, and hospital. The plan also incorporated athletic

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Water tower at Hickam Field, c. 1938
Source: 15th Air Base Wing History Office



First phase housing completed at Hickam Field, January 1939
Source: 15th Air Base Wing History Office

fields and an elaborate park system. A railroad connected Hickam to Fort Kamehameha and Honolulu. The construction of Hickam Field, the largest peace-time project undertaken by the Quartermaster Corps at that time, employed about 2,000 men at the peak of operations. Upon completion it was the Army's largest airfield.

Wheeler and Bellows were the fighter plane bases; Hickam Field became the Hawaii Army Air Force bomber base, as Hickam was the only field large enough during WWII to handle the B-17 bomber. On November 2, 1940, Major General



Apartment building at Hickam Field, c. 1941
Source: 15th Air Base Wing History Office



Officers' Housing along Eighth St. from water tower, 1944
 Source: 15th Air Base Wing History Office

Frederick L. Martin assumed command of the new Hawaiian Air Force, which later became known as the "Pineapple Air Force." At the national level, the Air Force became a separate service on September 18, 1947.

In the spring of 1941, more bombers were allocated to the Hawaiian Air Force than any other overseas garrison, indicating the growing concern about the possibility of war in the Pacific. By December 1, 1941, the Hawaiian Air Force had 754 officers, 6,708 enlisted men, and 231 aircraft. In the Japanese attack on December 7, 1941, the Hawaiian Air Depot's engineering building, depot restaurant, dock and dock hangars, and three hangars were all heavily damaged. Bombs wrecked Hangar 11, killing nearly all of the 11th Bomb Group's armament and aircraft maintenance technicians. Many other buildings sustained damage. The huge new barracks building (Hale Makai) was a major target, reportedly the most heavily bombed building on



NCO Housing Area with Pearl Harbor on the left, 1944
 Source: 15th Air Base Wing History Office

Oahu. Total casualties at Hickam from the attack were 121 killed, 37 missing, and 274 wounded. About half of Hickam's planes were destroyed or severely damaged.



Base operations building at Hickam Field, c. 1944
 Source: U.S. Army Museum of Hawaii, Photo 2562

As the U.S. became involved in World War II, Hickam became a major military strategic airfield. The base has provided many services over the years including operations during overseas wars, support of the space program, and rescue activities. A portion of Hickam was designated a National Historic Landmark by the Secretary of the Interior in 1985. Hickam continues to be the center for the U.S. Air Force in Hawaii.

Major Landscape Features of Neighborhood

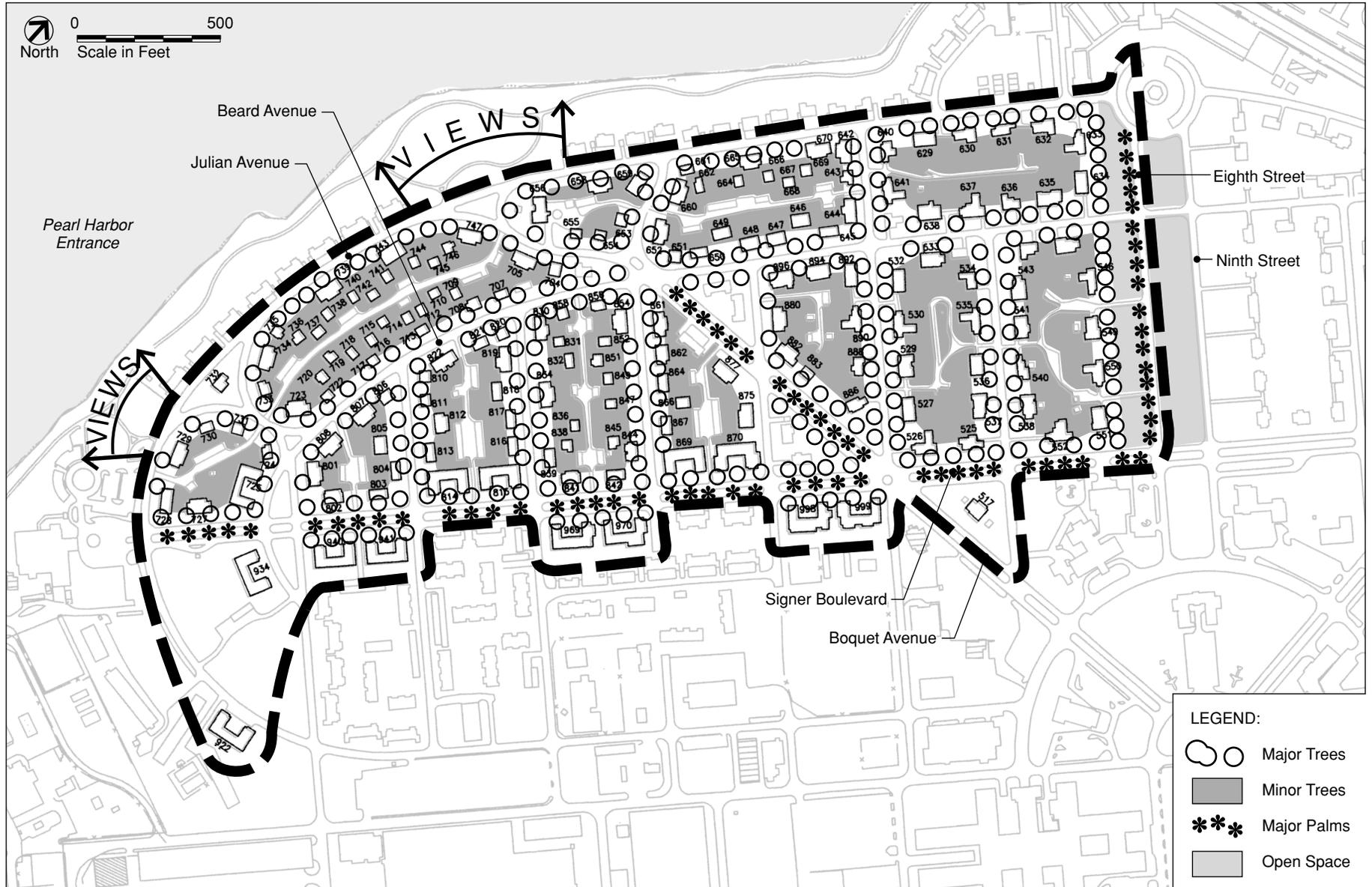
Landscaping was planned early in the project. A nursery was one of the first projects started at the base so that plants could be of substantial size when the buildings became ready for occupancy. The nursery was under the supervision of Staff Sergeant B. Kreitz, who also served under Captain Nurse at Hamilton Field, California. Many of the plants and cuttings were donated to the nursery by the community, and over 175 varieties and over 300,000 plants were utilized at the base. The chief landscape

4-9

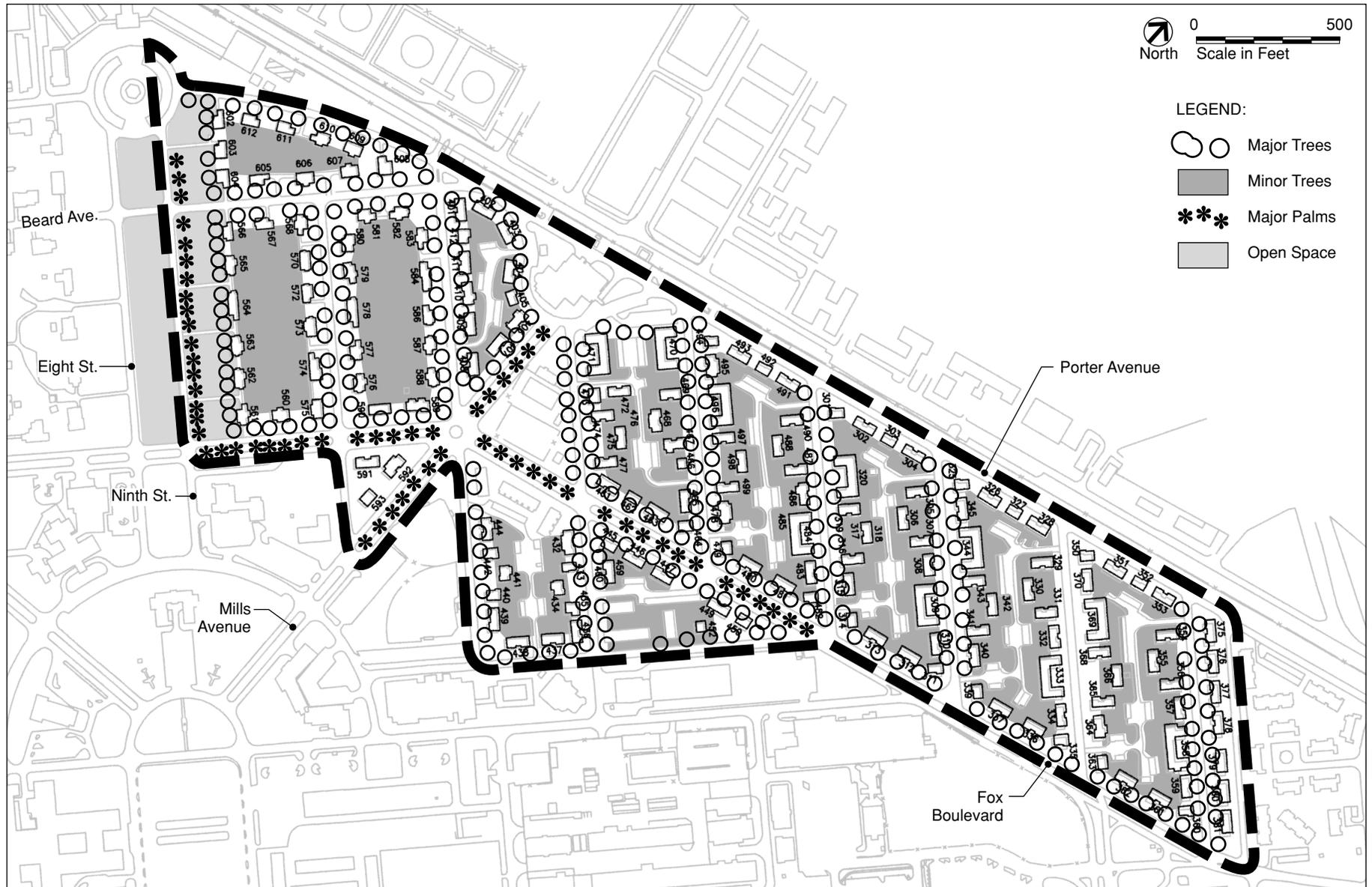


Nursery
 Source: U.S. Air Force Public Affairs Division, 1985:22

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



Officers' Housing area landscape





Landscape at Hickam Air Force Base Officers' Housing area
Source: Belt Collins



Landscape at Hickam Air Force Base NCO Housing area
Source: Belt Collins

around the officers' housing is better maintained. There seems to be much more landscaping around the homes as well, with hedges and more accent shrubs. The landscaping in the NCO housing area is very basic with a few shrubs around the entry areas and some small accent trees. In both areas, the rear and side yard trees include African tulip, plumeria, brassaia, mango, areca palm, monkeypod, and banyan.

The neighborhood has internal views within the central mall and along the boulevards. There is also a view of Pearl Harbor from a small park behind the neighborhood. This park is connected to the neighborhood and the rest of the base by a network of jogging/walking paths.

Major Trees/Palms

- Monkeypod
- Banyan
- Date palm
- Royal palm

Other Trees

- Kamani
- Plumeria
- Brassaia
- Tabebuia
- Jacaranda
- Shower tree
- Norfolk Island pine
- Silk oak
- Swamp mahogany
- Royal poinciana

architect was John Bergen, assisted by George W. Pope, who was previously a landscape architect with the Hawaii National Park.

further enhanced by the line of royal palms and large banyans along the edge of the space.

Like the rest of the base, Hickam historic neighborhoods are among the best examples of classical layout planning in Hawaii. The overall layout of the base follows the early planning concepts of that time, with three levels consisting of the airfield, the hangars and technical buildings adjacent to the field, and support facilities, including neighborhoods and community buildings. A semi-circular area—originally the location of the administration building, post exchange, and other community buildings—centrally organizes the base. This central space continues along the longitudinal axis of the base and serves as the community hub. A central mall is perpendicular to the longitudinal axis, and two boulevards radiate out into the housing areas. As the formal focal point of the neighborhood, the central mall separates the officers' housing area from the NCO housing area. The formality is

The residential area is divided into blocks of varying shapes, because some of the main boulevards and avenues are curved or run diagonally across the parallel grid of cross streets. The residential blocks follow many of the "Garden City" planning principles, from the wide boulevards to the large front yards which allow for more green space. Fox Boulevard, the main housing thoroughfare, has a grassed median and is planted with a formal row of date palms and monkeypod street trees. Two other boulevards that radiate from the semi-circle are grassed and planted with royal palms. The cross streets are also planted with street trees, and each street has its own theme tree. The species of street trees include silk oak, monkeypod, royal poinciana, shower tree, jacaranda, gold tree, and Geiger tree.

There is a noticeable difference in the foundation planting around the buildings between the officers' and NCO housing areas. The landscaping



Hickam Housing neighborhood
Source: Mason Architects, Inc.



Eave and clay tile roofing
Source: Mason Architects, Inc.

Hickam Air Force Base Housing Designs

The historic housing area at Hickam Air Force Base, located northwest of the airfield and the maintenance and administration buildings, was constructed between 1937 and 1941 in two phases. The first phase, built by Robert E. McKee Construction Company of Los Angeles between 1937 and 1938, consisted of single-family officers' houses and both single-family houses and duplex units for NCOs. Thirteen different standard house plans were used to build a total of 71 houses and five duplex units. The second phase, built by E. E. Black, Ltd. of

Honolulu between 1939 and 1941, included single-family, duplex units and two-story apartment buildings for officers and NCOs. Ninety-two single-family houses, 149 duplex buildings, and 13 apartment buildings were constructed in the second phase.

A total of 21 different house types were built in these two phases. Types A through O (not including I) are officers' housing located below (south) of Eighth and Ninth Streets. Types 1 through 7, which are NCO's housing, are located above Eighth and Ninth Streets. Duplex types are N, O, 5, and 6; all other types are single-family.

All houses are constructed with concrete ground floor slabs, concrete brick walls, and wood roof framing. The eaves are usually open with clipped rafters, except some of two-story types have closed eaves with ornamental grilles over the soffit vents. The original clay tile roofing shingles have been replaced with asphalt shingles, but recent preservation efforts at the base have succeeded in instilling a policy of returning the tile shingle roofing to the houses, particularly to houses along prominent streets.

The two-story houses have exterior decorative horizontal banding at the second floor level, which has been cast into the bond beam. Original windows are wood frame double hung, usually one-over-one, two-over-one, or two-over-two panes. Some houses have a decorative stepped-pattern around the main entry door. All house types have a screened service porch off the kitchen, except house Types 2

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Building Plan Type	Facility Number	Facility or Design Name	Date
House Plan A	517	Unique—Commanding Officers' Housing	1938
House Plan E	656	Unique—Commanding Officers' Housing	1941
House Plan B	529, 549, 551, 630, 632	Officers' Housing	1938
House Plan C	707, 708, 731-733, 806, 810, 820, 821, 858	Officers' Housing	1941
House Plan D	643, 651, 661, 653-655, 704, 707, 717, 722, 724, 730, 741, 856	Officers' Housing	1941
House Plan F	533, 537, 538, 543, 545, 635, 888	Officers' Housing	1938
House Plan G	526, 530, 535, 546, 550, 552, 633, 637, 641, 890	Officers' Housing	1938
House Plan H	527, 536, 541, 629, 638, 634, 892	Officers' Housing	1938
House Plan J	534, 544, 636	Officers' Housing	1938
House Plan K	640, 886	Officers' Housing	1938
House Plan L	525, 540, 631	Officers' Housing	1938
House Plan M	662, 664, 666, 667, 669, 709, 712-720, 735-738, 740, 742, 744-746, 831, 832, 836, 838, 845, 847, 849, 851, 852, 866, 883	Officers' Housing	1941

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and 4, where the service porch is an open area within the garage. House types constructed in the first phase (A, B, F, G, H, J, K, L, and 1–5) have attached garages, some with built-in storage areas. The other house types are now serviced by detached carports built later in the center of each block. These carports have metal pipe columns and wood roof framing.

Two-story units have decorative metal or wood and metal railings at the open stairways. Ceilings are canec, a sheet material made from sugar cane. Original flooring finishes are acid-stained concrete and wood tongue-and-groove. Interior doors are wood single-panel or five-panel. Original kitchen cabinets were plywood or “built-up” wood with

ceramic tile or wood counters; most cabinets have been replaced with modern style cabinets.

Houses constructed in the first phase display the typical elements of the Hawaiian Bungalow style: double-pitched roofs, wide wave overhangs and exposed rafter ends, large windows, screened lanais,

Building Plan Type	Facility Number	Facility or Design Name	Date
House Plan 1	562, 563, 565, 570, 573, 575	NCO	1938
House Plan 2	579, 581, 582, 586, 604, 607, 608, 610, 611	NCO	1938
House Plan 3	561, 566, 568, 577, 583, 602, 605	NCO	1938
House Plan 4	560, 567, 572, 576, 580, 587, 588, 603, 609, 612	NCO	1938
House Plan 7	301, 303, 311, 314, 325, 327, 339, 350, 352, 360, 363, 405, 412, 433-435, 440-442, 445, 450, 452, 462, 464, 466, 473, 479, 482, 492, 494, 593	NCO	1941
House Plan N	645-650, 802-805, 812, 813, 816-818, 839, 841, 842, 844, 862, 864, 867	Officers Duplex	1941
House Plan O	642, 644, 652, 658-660, 665, 670, 705, 723, 728, 734, 739, 743, 747, 801, 807, 808, 819, 822, 830, 834, 854, 861, 877, 875, 880, 882, 894, 896	Officers Duplex	1941
House Plan 5	564, 574, 578, 584, 606	NCO Duplex	1938
House Plan 6	302, 304-310, 312, 313, 315-319, 326, 328-332, 334, 336, 337, 340-343, 351, 353-357, 359, 361, 362, 364-368, 375-381, 401-404, 406-411, 432, 436-439, 444, 447, 449, 460, 461, 463, 465, 467-469, 472, 474, 475, 477, 478, 480, 481, 483, 486-491, 493, 495, 497-499, 589, 590, 591, 592	NCO Duplex	1941
	725, 814, 815, 869, 870, 922, 934, 940, 941, 969, 970, 998, 999	Officers Apartment Building	1941
	309, 320, 333, 344, 358, 369, 470, 471, 484, 496	NCO Apartment Building	1941

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and grilles with organic designs. The phase two houses are similar to phase one, but the architectural style shows more influence of the Moderne style, related to the Art Deco style. Typical features include smooth wall surfaces, usually of stucco, flat roofs, horizontal or vertical grooves or lines in walls, curved surfaces, geometric forms, and the use of glass block. Examples of the Moderne style in the Hickam

houses include a thin concrete cantilevered canopy at the entry door which wraps around the corner of the house to cover a bay window, horizontal banding between the first and second floors of the two-story units, the stepped pattern around the entrance door, the horizontal muntins in the windows, and geometric-shaped vents.

Typical changes to the houses include modernizations of kitchen and bathroom cabinets and fixtures. In some houses the original screened lanai has been enclosed, and in some units, a small single-story addition has been added. Jalousie windows have replaced some of the original wood sash windows, but only at the former Servant's Quarters areas of the houses.

Commanding Officer's House Plans

Two house plans are unique: house plan A built in the first construction phase, and house plan E built in the second construction phase. Both are located in prominent places. House plan A is located by itself in the triangle created by Signer Boulevard, Boquet Boulevard, and Seventh Street. House plan E is located at the curved intersection of Monthan Street and Julian Avenue.

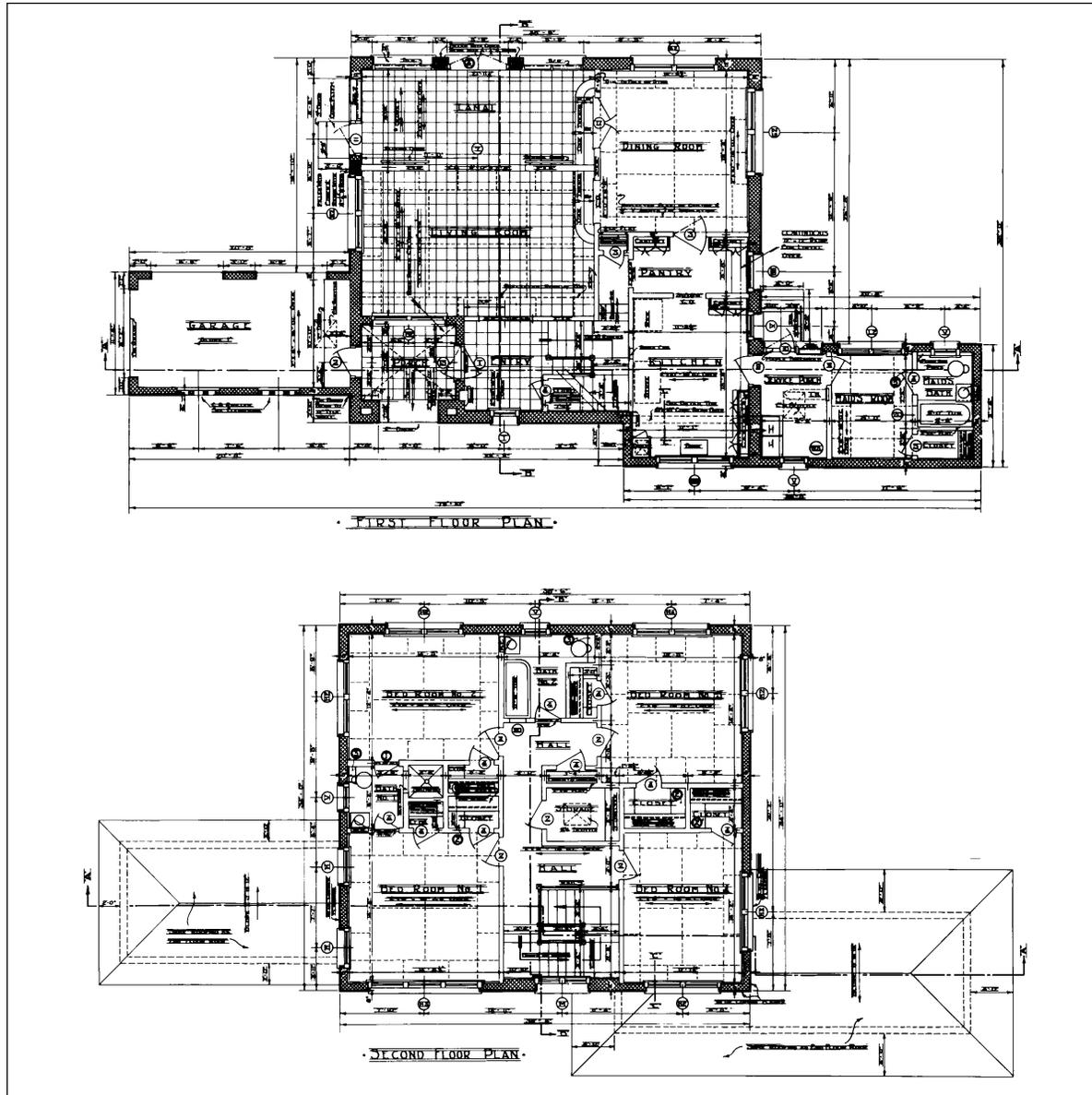


Quarters 517 in 1938
Source: 15th Air Base Wing Environmental Planning

House plan A has a recessed entry porch, entry foyer, living room, dining room, enclosed lanai, kitchen, pantry, service porch, maid's room with bathroom, and attached garage on the first floor. The second floor contains four bedrooms, three bathrooms, and a storage room. The entry porch, foyer, living room, and lanai all have acid-stained concrete floors. A family room and screened lanai were added on the first floor. The upstairs originally had two bathrooms, but the layout was slightly modified to add a third bathroom.



Commanding Officer's House Plan A (Quarters 517)
Source: Mason Architects, Inc.



Front entry, Quarters 517
Source: Mason Architects, Inc.

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Living room and lanai, Quarters 517
Source: Mason Architects, Inc.

Commanding Officer's House Plan A first floor (above) and second floor (below) original plans



Built-in cabinets and canec ceiling at dining room, Quarters 517

Source: Mason Architects, Inc.



Commanding Officer's House Plan E (Quarters 656)

Source: Mason Architects, Inc.

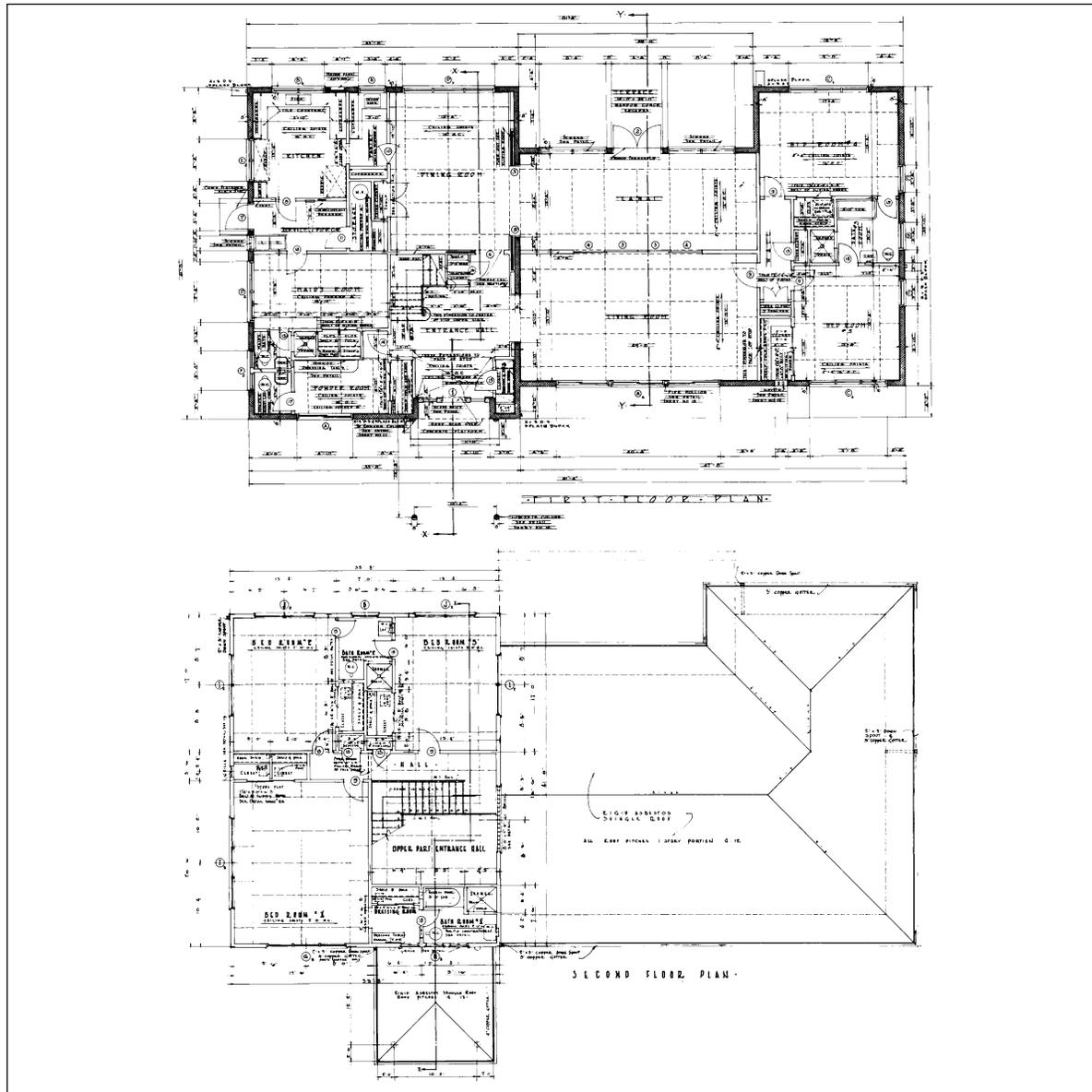


Decorative vents at Quarters 656

Source: Mason Architects, Inc.

House plan E, constructed in the second phase, exhibits some of the details typical of that phase, such as glass block, gluted columns at the main entry, and unplastered concrete block exterior walls. This large two-story house has an entry foyer, living room, dining room, family room (originally a lanai), kitchen, utility room, sitting room (originally a bedroom), bedroom, three bathrooms, and a coat room on the first floor. The second floor has

three bedrooms and two bathrooms. Modifications to the original layout include the addition of a screened lanai, alteration of the pantry and storage areas in the kitchen, conversion of the original maid's room into a utility room, and addition of a small room off of the kitchen that is now used as a breakfast nook. Many of the first floor rooms have acid-stained concrete floors and canec ceilings with battens. The stairway has a decorative metal handrail.



Typical original front door and screen door
Source: Mason Architects, Inc.

Commanding Officer's House Plan E first floor (above) and second floor (below) original plans



Attached garage, Officers' House (Quarters 525)
Source: Mason Architects, Inc.

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Officers' House Plan L (Quarters 525)
Source: Mason Architects, Inc.

Officers' House Plans

There are 10 different plan designs for Officers' housing at Hickam. Plans B, F, G, H, J, K, and L were built during the first construction phase of 1937–1938. Plans C, D, and M were built during the second construction phase of 1939–1941. Officers' houses built during the first phase are located on Sixth, Seventh, and Eight Streets between Signer Boulevard and Julian Avenue. Officers' houses built during the second phase are located between Signer

Boulevard, Sixth Street, and Julian Avenue. Although the floor plans are different, the houses have the same construction type and architectural style and features, and form a cohesive housing area, which in turn is part of the Hickam historic housing district.

House plan L is shown here as an example of the officers' housing at Hickam. It has a small covered entry porch leading to a foyer, which contains

the stair to the second floor. The foyer accesses the living room, dining room and hall leading to the kitchen, back service porch, and maid's quarters with a bathroom. A large lanai, which was originally screened but is now enclosed, is reached through the living or dining rooms. The enclosed garage protrudes off one side of the house and is accessed from the house interior through the living room. The second floor has three bedrooms and two bathrooms.

This house design has acid-stained concrete floors in the entry porch, foyer, living room, and lanai. All other rooms have wood floors, except the garage, which has a concrete floor. The garage has decorative vent openings at the front wall. Original interior doors are wood panel, swing or sliding, and some have glazing. The front entry door has a vertical scored pattern. Original wood double-hung windows remain.

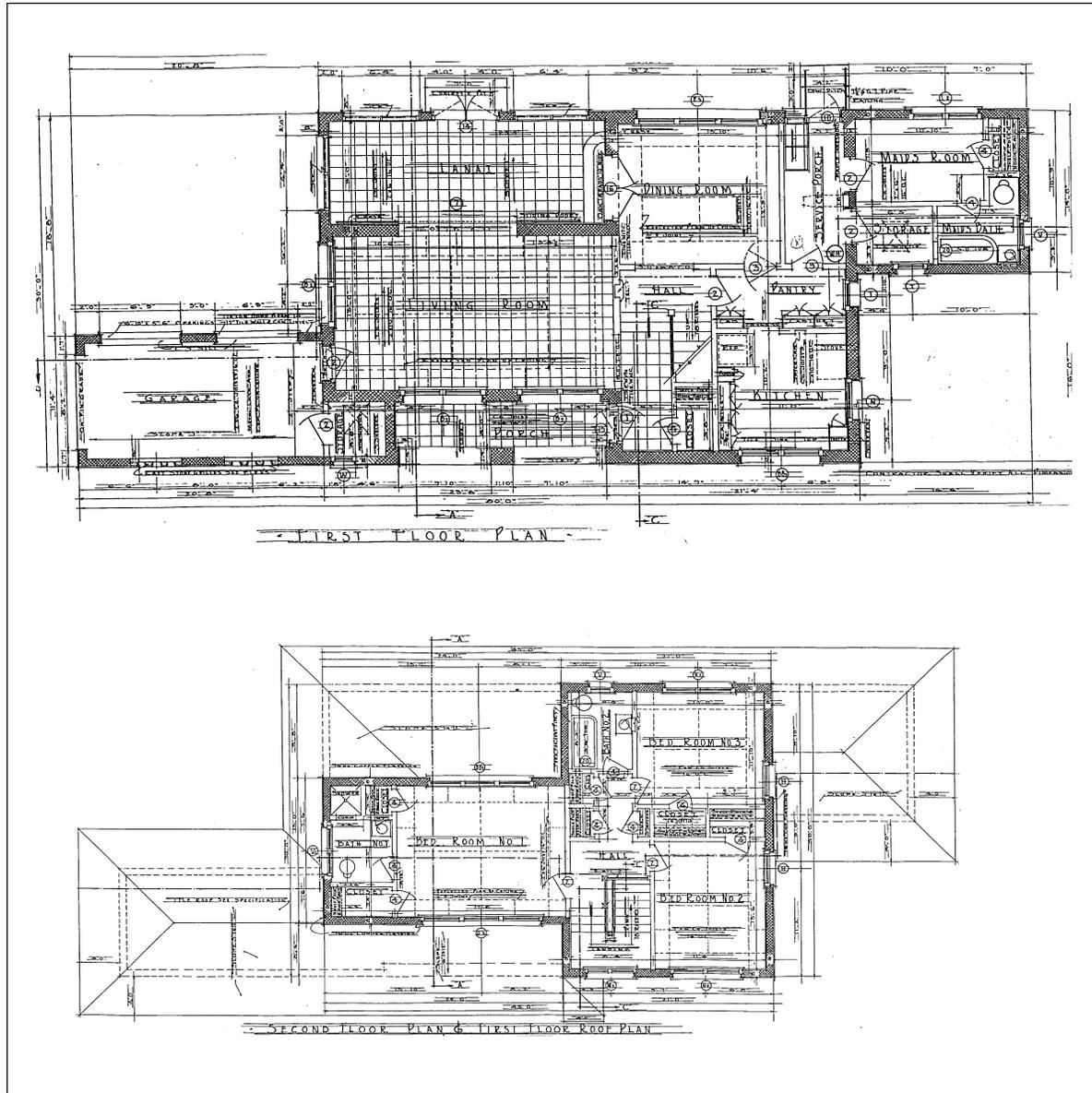


Officers' House Plan J (Quarters 544) in 1938
Source: Mason Architects, Inc.



Officers' House Plan J (Quarters 544) in 1986
Source: Mason Architects, Inc.

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Officers' House Plan L first floor (above) and second floor (below) original plans

Non-Commissioned Officers' House Plans

The Non-Commissioned Officers' (NCO) houses at Hickam are generally very similar to the Officers' houses but have slightly less decorative details. There are five different single-family NCO house plans; plans 1, 2, 3, and 4 were built during the first construction phase, and plan 7 was built during the second construction phase. NCO houses built during the first construction phase are located on Ninth, Tenth, and Eleventh Streets between Signer Boulevard and Porter Avenue. NCO houses built during the second construction phase are located between Eleventh Street and Eighteenth Street, and between Fox Boulevard and Porter Avenue. The floor plans are different, but the houses have the same construction type and architectural style and features, thus forming a cohesive NCO housing complex, which in turn is part of the Hickam historic housing district.

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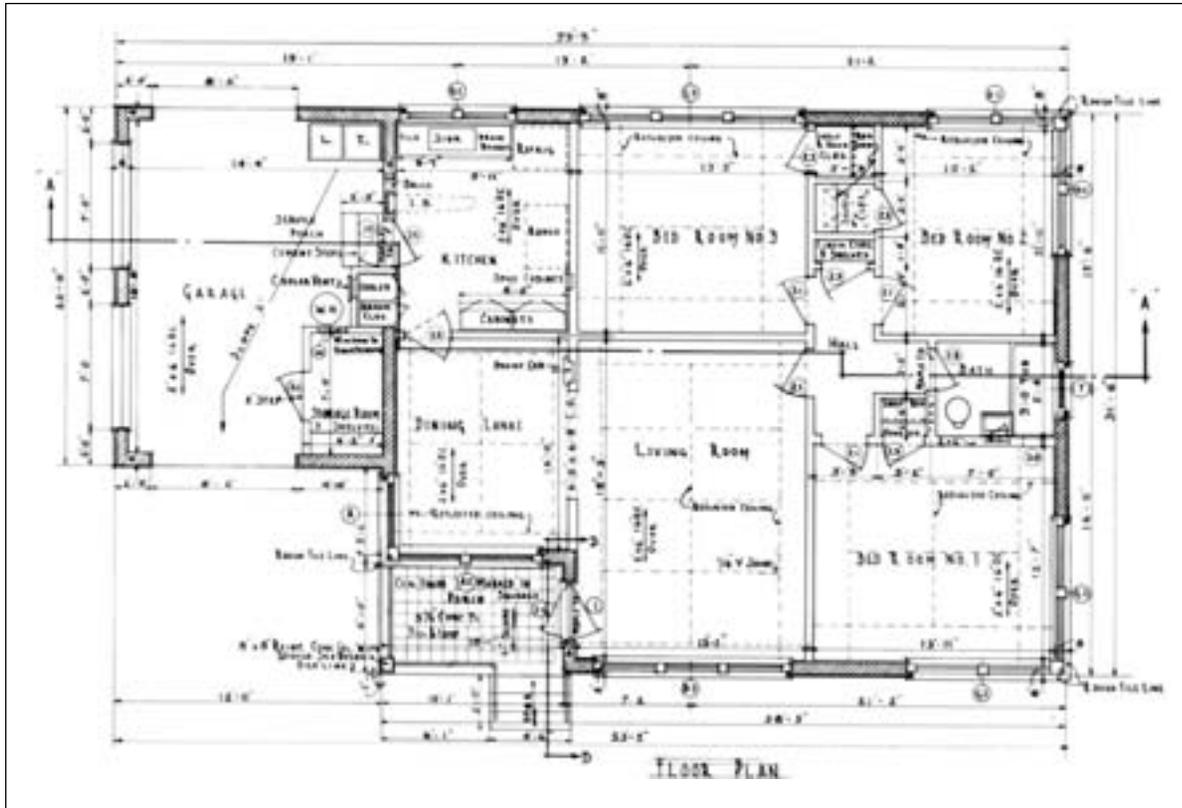
House plan 4 is shown here as an example of the NCO housing. Built in the first construction phase, it is a single-story house with a double-pitched hipped roof. The front entry is located at the corner of the house. The house contains a living room, dining room, kitchen, three bedrooms, an original bathroom, and a bathroom addition. The attached garage extends off to one side of the house. Interior finishes include wood floors, plaster walls and ceilings, wood panel doors, wood wall base and picture moldings.



NCO House Plan 4 (Quarters 576)
Source: Mason Architects, Inc.



NCO House Plan 4 (Quarters 609) entry porch
Source: Mason Architects, Inc.



NCO House Plan 4 original floor plan



Typical single-panel interior wood door
Source: Mason Architects, Inc.



Original exterior railing
Source: Mason Architects, Inc.

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NCO Duplex Plan 5
Source: Mason Architects, Inc.

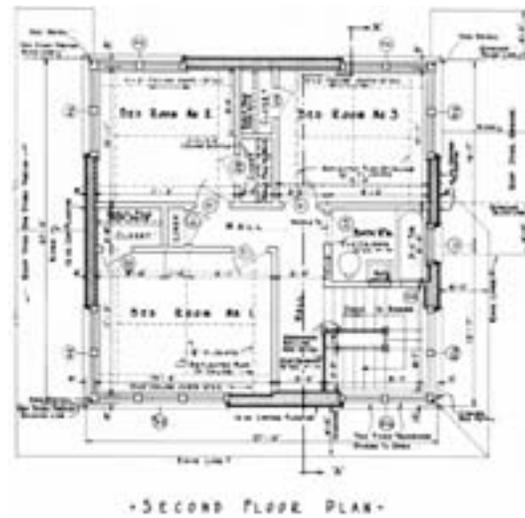
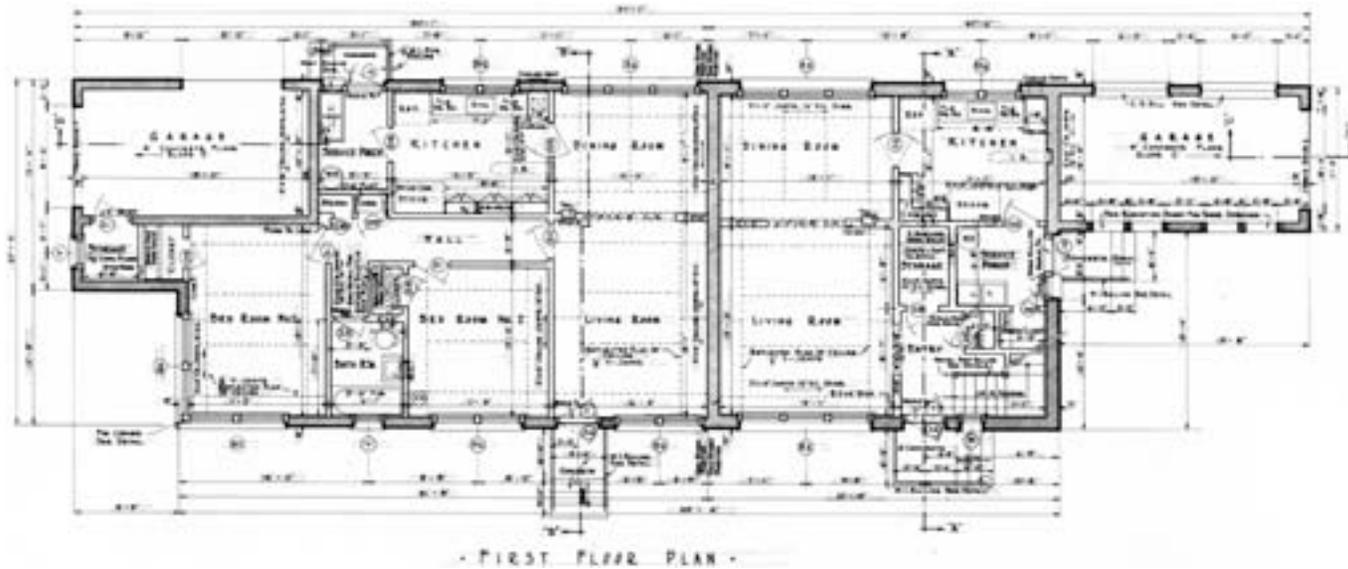
Duplex Plans

There are four different duplex house plans at Hickam. NCO duplex plan 5 was built in the first construction phase. Officers' duplex plans N and O and NCO duplex plan 6 were built in the second construction phase. Duplex plans O and 6 are very similar, and are identical to duplexes built at Wheeler

Army Air Field the previous year, except that the Hickam duplexes do not have fireplaces. NCO duplex plan 5 and Officers' duplex plan O are shown here as examples.

NCO duplex plan 5 is a two-story design with a single-story unit attached to a two-story unit. The

single-story unit enters from the middle of the structure into a living room and dining room area. A central hallway leads to the kitchen and service porch, two bedrooms, and bathroom. The garage is attached and accessible only from the outside. The two-story unit is entered from the building corner into a foyer. The first floor contains the living room, dining room, kitchen, service porch, and an attached garage. The second floor has three bedrooms, one original bathroom, and a modern bathroom addition. Architectural features include vertically-grooved front entry doors, five-panel wood interior doors, star-shaped vent openings at the garage, wood flooring, and historic interior and exterior railings.



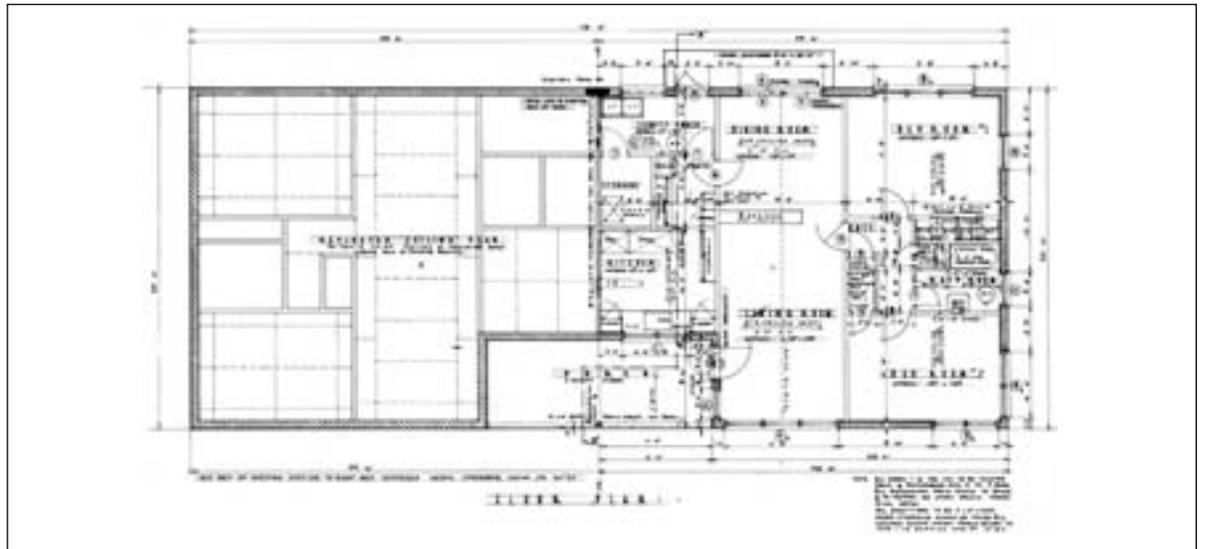
NCO Duplex Plan 5 first floor (above) and second floor (below) plans

Officers' duplex plan O has a recessed entry at the middle of the front elevation. The front door leads into the living room and dining room area. A built in shelf/partial height wall separates the dining area from the living room. Two bedrooms, a bathroom, and interconnecting hallway are located on the outer side of the living room, and the kitchen, service porch, and storage rooms are located at the middle of the building. Shed-form enclosed porch additions have been added on the rear of each building. Sliding doors lead from the living room out to this back lanai. These units have typically been modified so that the kitchen is now in the location of the original service porch and storage area just off the dining room, and the original kitchen area is now the utility area. NCO duplex plan 6 is nearly identical to plan O, with minor differences such as the main entry leading straight into the living room, reducing the size of the living room, and access to the bedrooms directly from the living room, with no hallway between.

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Officers' Duplex Plan O
Source: Mason Architects, Inc.



Officers' Duplex Plan O floor plan

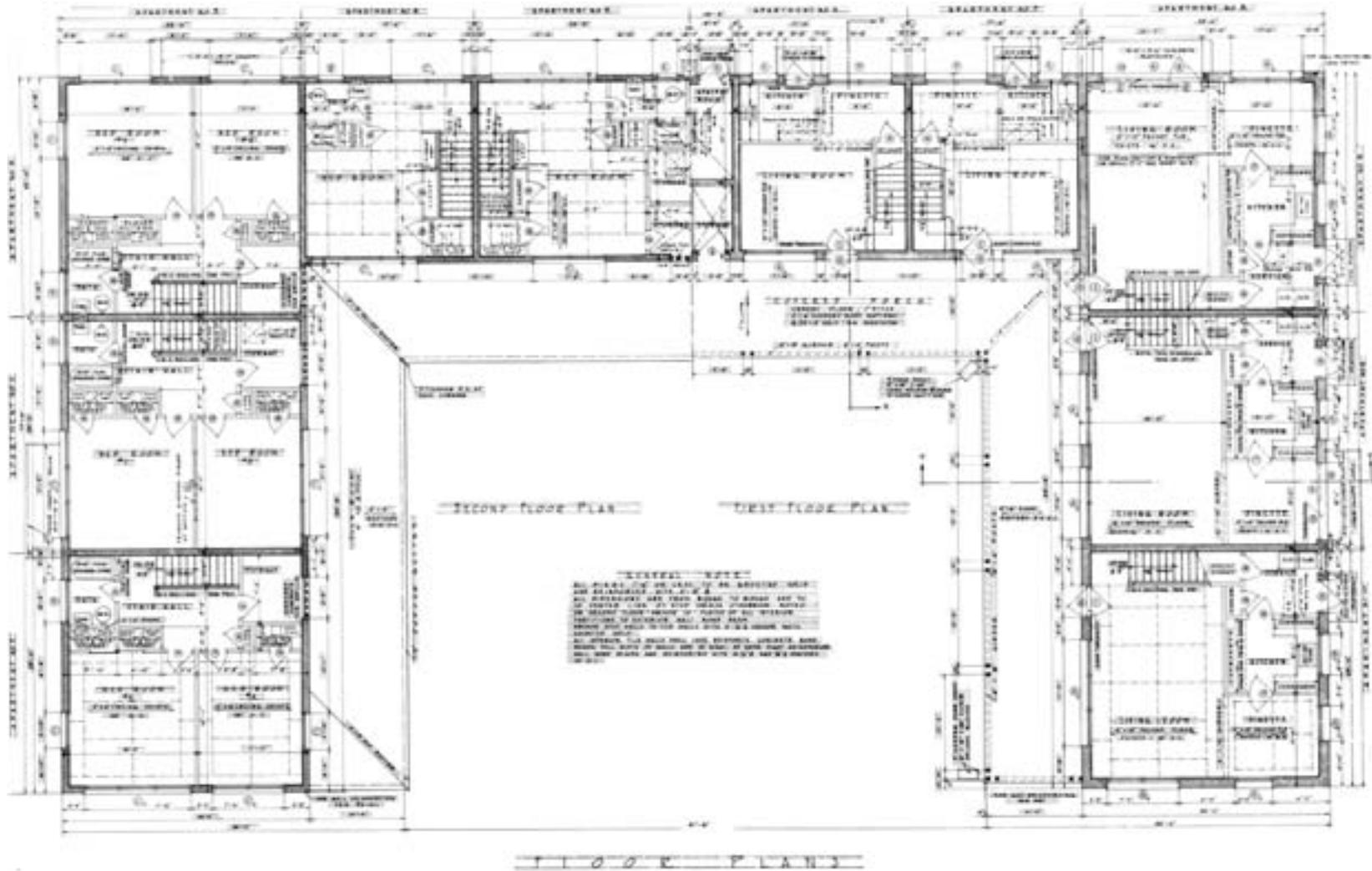
Officers' and NCOs' Apartment Building Plans

Constructed in 1941, these two-story apartment buildings have U-shaped plans with entries located on the first floor in the center courtyard under a covered walkway. The walkway awning roof has doubled wood columns. Decorative concrete grill vents on the exterior wall at the second floor ventilate a storage room. All units have a living room, dining area, and kitchen on the first floor, and bedrooms and bathrooms on the second floor. In the NCO housing area, the apartment buildings have nine units, eight with two bedrooms and one with three bedrooms. In the officers' housing area, each unit originally had a living room, kitchen, and dining area on the first floor. The four smaller center units had one upstairs bedroom and a bathroom, while the larger units at the building wings had two bedrooms and one bathroom. These buildings originally had 10 two-story units, but the four center units have been modified to combine two units into one, so the buildings now have eight units. The apartment buildings are identical to those at Wheeler Army Air Base, which were built three years later.



Officers' Apartment Building
Source: Mason Architects, Inc.

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Officers' Apartment Building floor plan



NCOs' Apartment Building
Source: Mason Architects, Inc.



Original bronze interior door hardware
Source: Mason Architects, Inc.

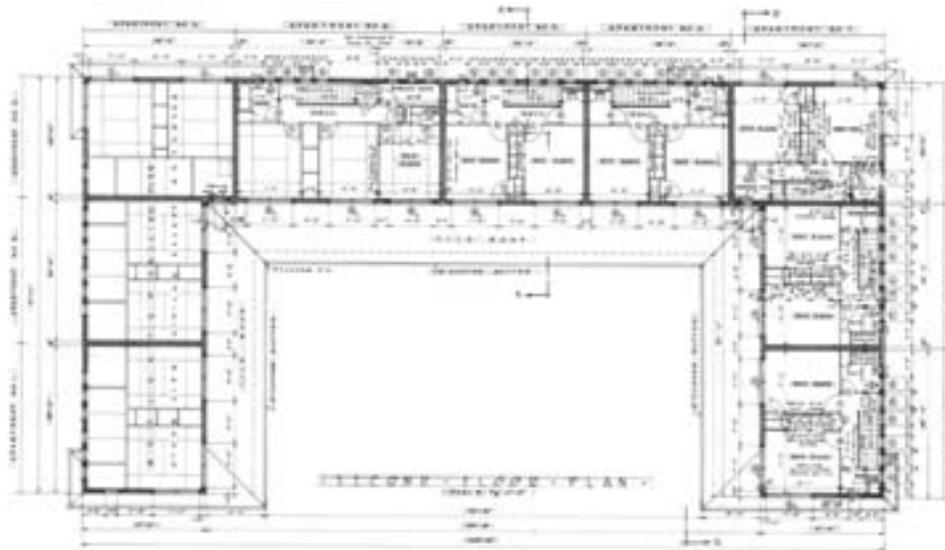
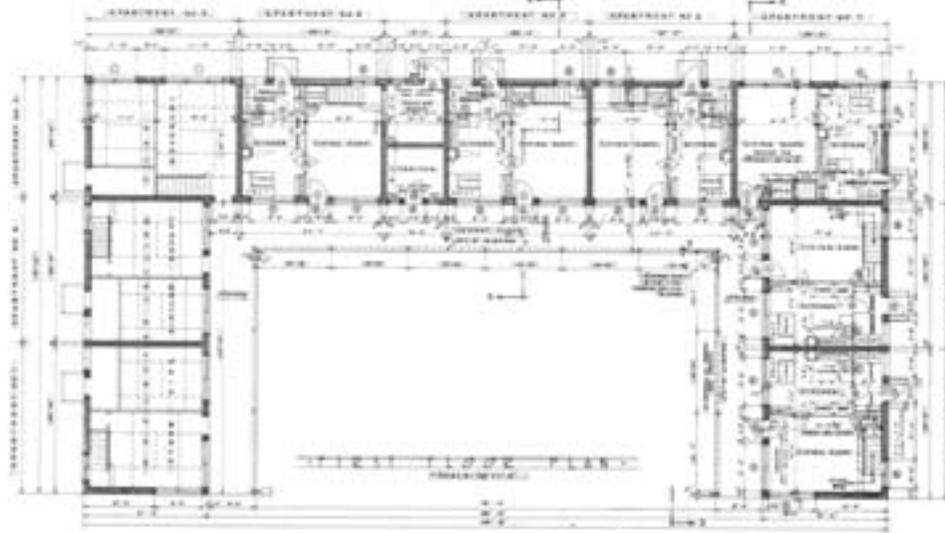
CHARACTER-DEFINING FEATURES

Exterior Features:

- Concrete brick walls.
- Stucco finish on the exterior walls in the first construction phase.
- Wood roof framing.
- Hipped roofs.
- Gablet roof vents.
- Wide overhangs.
- Open eaves with clipped rafters or closed eaves with ornamental grilles over the soffit vents.
- Clay tile shingle or asphalt shingle roofing.
- Double-pitched roofs in the first construction phase.



Geometric wall vents
Source: Mason Architects, Inc.



NCOs' Apartment Building floor plan



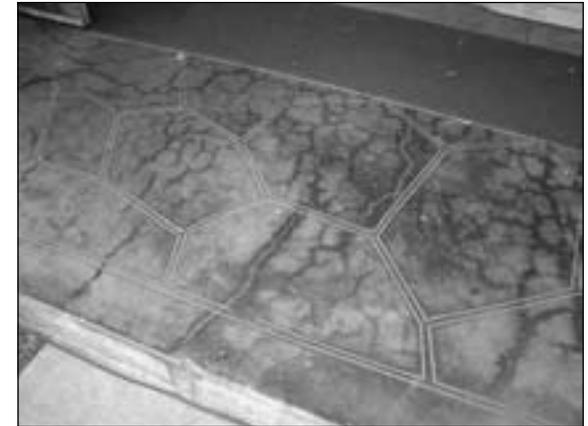
Moderne doorway
Source: Mason Architects, Inc.

- Pent roofs over the first floor on the inside of the U-shaped plan for the apartment buildings.
- Decorative horizontal banding at the second floor level, cast into the bond beam.
- Wood frame double hung windows, usually one-over-one, two-over-one, or two-over-two panes.

- Wood entry door with vertical groove pattern.
- Decorative stepped-pattern around the main entry door in second phase houses.
- Metal handrails at exterior steps.
- Screened service porch off the kitchen area.
- Attached garages in the first construction phase.



Stepped Moderne doorway
Source: Mason Architects, Inc.



Acid-stained patterned concrete at front entry
Source: Mason Architects, Inc.

Interior Features:

- Brown acid-stained concrete flooring on the first floor, with rectangular patterns or irregular flagstone patterns.
- Wood tongue-and-groove flooring on the first and second floors.
- Plaster wall finish with wood base.
- Plaster or canec ceiling finish.
- Picture moldings in living rooms, dining rooms, lanais, and bedrooms.
- Single-panel or five-panel wood doors.



Wood interior railing
Source: Mason Architects, Inc.



Built-in phone cabinet
Source: Mason Architects, Inc.



Original bathroom floor tile
Source: Mason Architects, Inc.

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- Decorative metal or wood railings at the open stairways.
- Built-in decorative phone alcove with phone book shelf.
- Built-in corner china cabinets in the dining room.
- Historic cabinets in pantry or kitchen.
- Historic light fixtures.
- Historic ceramic tile floors in the bathrooms and showers.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Enclosure of screened lanai with jalousie windows.
- Addition of CMU lanai with jalousie windows.
- Bathroom additions in plans 1, 4, and 5B.

- Modernization of kitchens and bathrooms, including the replacement of original ceramic floor tiles.
- Alterations of original closets.
- Covering acid-stained concrete or wood floors with vinyl flooring or carpet.

Designs Similar to Those at Hickam Air Force Base

In the period just prior to, during, and just following WWII, several housing designs were used at multiple Army bases around Oahu. These included single-family, duplex, and apartment-style houses.

Fort Shafter

Duplex and single-family units were constructed at Fort Shafter between 1941 and 1943. Three structures are single-family homes and 16 buildings have duplex units. With the same designs as NCO house plan 7 and NCO duplex type 6, they appear to have been built from the same drawings except for minor modifications. The Fort Shafter drawings also have “Type No. 6” and “Type No. 7” in the title blocks. The duplex unit plan was also used at Wheeler Field.

Wheeler Army Air Field

Two different duplex types were built at Wheeler Field in 1940. The Wheeler NCO Quarters duplexes are the same as Hickam’s NCO duplex plan 6, which was also used at Fort Shafter. The Wheeler Company Officers’ duplex is the same as the Hickam Officers’ duplex plan O.

The single-family house constructed at Wheeler in 1940 is the same as Hickam’s Officers’ house plan M. The three apartment buildings constructed at Wheeler in 1943 are identical to Hickam’s Officers’ apartment buildings.

Schofield Barracks

Nineteen residential buildings were constructed at Schofield Barracks in 1948 on the west side of the base on two concentric horseshoe-shaped loops around a central open green. Four building plans were used, two single-family plans and two duplex plans. It appears from photographs that the two duplex plans are the same as those constructed during WWII at Wheeler, Fort Shafter, and Hickam. The single-family houses appear to be different than those at the other Army bases. These buildings have been demolished.

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Fort Kamehameha Neighborhood Significance

This historic fort is representative of the evolution of the military in Hawaii. Its construction beginning in 1907 indicated the growing awareness by the United States of threats from countries in eastern Asia and American desire to control the Hawaiian Islands to take advantage of their strategic location. Growth of the base up through World War II was evidence of continued interest in the Territory of Hawaii and of the United States' increasing military strength. Fort Kamehameha's participation in the defense of Pearl Harbor during the attack on December 7, 1941, adds to its significance in America's history.

The housing designs show a conscious response to the regional architectural styles and to the tropical environment of the site. From 1890 until 1917, the Army's Quartermaster General had produced and used standardized plans for two-story structures throughout the mainland U.S. The Fort Kamehameha houses demonstrate an early acceptance by the Army of one-story houses, at least for posts in warm climates. These house designs were also built at other Army installations in Hawaii, including at Fort Shafter in 1917, Schofield Barracks in 1919, and Ford Island, Pearl Harbor, in 1922.

The board-and-batten, single-wall style was common to the plantation housing of Hawaii at the turn of the century, and the pitched roofs, open courtyard, and large screened areas show how Army houses were adapted to tropical living by integration of the

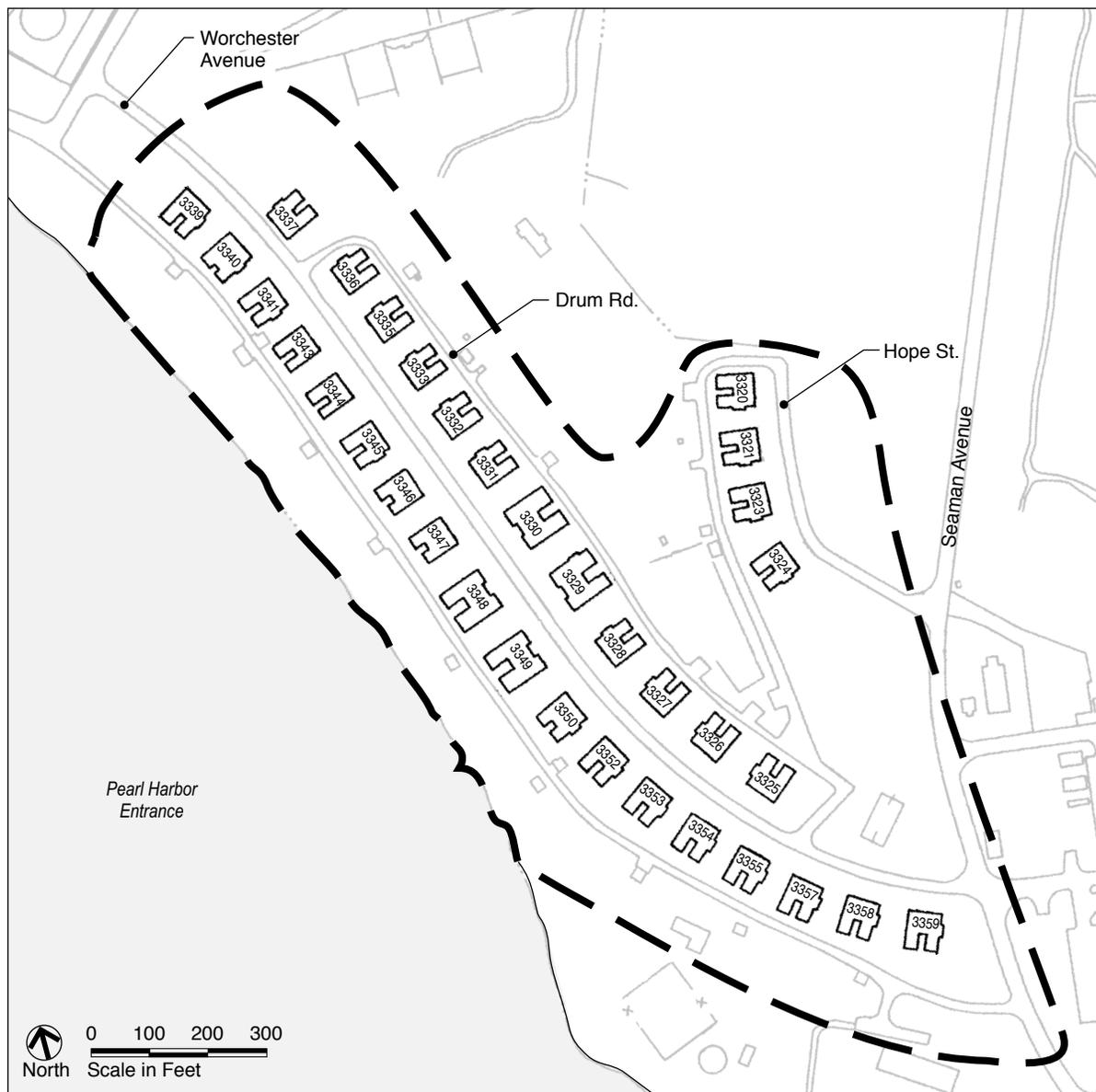


*View of the Fort Kamehameha neighborhood from Worcester Avenue
Source: Augie Salbosa Photography*

interior and exterior spaces. The screened lanai and hallway areas created a continuous indoor and outdoor circulation and provided excellent cross-circulation throughout the house. A large amount of open space and the historic landscaping greatly enhance this neighborhood.

Neighborhood History

The naval base at Pearl Harbor was constructed as the major installation for Hawaii to defend against an attack on the west coast of the United States. Pearl Harbor was, in turn, to be defended by a series of coastal defense forts. The land for Fort



Kamehameha, located at the east side of the entrance to Pearl Harbor, was purchased in 1907, and work quickly began on the first battery and a railroad extension into the new fort.

In 1908, the Navy undertook a large-scale dredging project of the Pearl Harbor channel. Dredged materials were deposited at Fort Kamehameha in marshlands inland of the beach front to create more usable land area. In 1911, the first battery was completed and the fort was named Fort Kamehameha as a memorial to King Kamehameha I, who united the Hawaiian Islands under his rule. The batteries were constructed by the Army Corps of Engineers and manned by the Coast Artillery Corps of the Army. In 1913, after construction of the second battery, troops began arriving to man the fort. The men lived in tents until the first temporary housing, the bachelor officers' quarters, was completed. Two more batteries were constructed in the following year. The post headquarters operated from the magazine of one of the batteries until offices were constructed.

The 32 commissioned officers' Craftsman-style quarters were completed along Worcester Avenue in 1916. By 1919, 11 barracks buildings, 18 NCO quarters, a chapel, a post exchange, a movie theater, a swimming pool, racquetball and tennis courts, and many other structures had been completed. Construction was done by the Army Quartermaster Corps. Additional housing and recreational facilities, warehouses, and other structures were built at Fort Kamehameha up to and during WWII. The garrison increased from a pre-war 1,800 personnel to 18,000 in May 1943, and to 25,000 by March 1945.

Fort Kamehameha neighborhood



Fort Kamehameha, c. 1916

Source: U.S. Army Museum of Hawaii Photo #3515

The fort experienced its only active war experience on December 7, 1941, during the Japanese surprise attack. Japanese fighter planes flew overhead as they dove to bomb and strafe the adjacent Hickam Field and Navy targets at Pearl Harbor. Men hastily set up machine guns on the nearest level surface. The anti-aircraft guns successfully shot down several Japanese airplanes. Seven men were killed and at least 12 injured, and the post received a moderate amount of damage.

Throughout WWII, the post continued to serve as coastal defense for Pearl Harbor. By 1944, most of the older gun batteries were assigned to caretaker status. After the war, and with the arrival of atomic weapons, artillery were considered obsolete and were scrapped, and the coastal defenses were abandoned. Most of the temporary structures constructed during WWII were demolished soon after the war, as were many of the buildings that had been constructed earlier. The Officers' housing, batteries, and a few other buildings are all that remain of this historic defense installation.

Four houses at the northwestern end of the row of houses were moved for the expansion of the wastewater treatment plant. These houses, originally numbered #2 to #5, were moved to various locations: house #2 (now #3359) was moved to the southeastern end of the same row of houses, above Battery Hawkins; house #3 (now #3324) was moved to the south end of the small row of houses along Hope Street; house #4 (now #3337) was moved across Worchester Avenue adjacent to house #3336; and house #5 (originally #3339) was moved southeast to the lot adjacent to its original location.

Major Landscape Features of Neighborhood

Fort Kamehameha housing is located along the shoreline on the southwestern edge of Hickam Air Force Base. The neighborhood's linear layout is parallel to the shoreline, with the main public access, Worchester Avenue, dividing the neighborhood along this axis. All but four of the houses are along this axis and each is situated so that the entries are

not directly across from each other. Worchester Avenue is lined with large monkeypods planted on each side of the street and between each of the units. A secondary street, Hope Street, provides access to the remaining four houses, which were relocated to their present site when the wastewater treatment facility was expanded. Another secondary street, Drum Road, provides access to the homes on the east side of Worchester Avenue.

Hope Street loops from Worchester Avenue to Seaman Avenue. Due to the relatively newer location of these houses, there are no notable street trees. This part of the neighborhood is tucked away from the rest of the site, hidden from Seaman Avenue by a grove of *kiawe*. Most of the neighborhood is screened by these trees.

4-37



Landscape at the Fort Kamehameha neighborhood

Source: Belt Collins

The foundation planting around each of the houses is quite sparse. Side and backyard palms and trees include coconut, banyan, Norfolk Island pine, ironwood, royal poinciana, *kiawe*, and *milo*. Due to the proximity of the neighborhood to the ocean, a probable high salt content in the soil, and salt spray from ocean breezes, fewer species of plants can survive this type of environment. Along the shoreline edge of the neighborhood, a row of ironwoods help define the rear boundary of the neighborhood, while the *kiawe* grove helps define the opposite boundary.

This neighborhood has a wonderful view of the ocean. The beachfront area is the only significant open space for this neighborhood. The other open space area was created with the relocation of the four dwellings. Hope Street intersects with Drum Road and creates a triangular space that has been turned into a playground recreation area.

4-38

Major Trees/Palms

- Monkeypod
- Coconut
- Norfolk Island pine
- Banyan
- Ironwood
- Kiawe

Other Trees

- African tulip
- Shower tree
- Milo
- Royal poinciana



Landscape at Fort Kamehameha

Fort Kamehameha Housing Designs

These houses represent an early recognition by the Army of the need for regional variations. Designed in the Honolulu Office of the Constructing Quartermaster, they show a conscious response to the regional architectural style and to the tropical environment of the site. The houses combine some of the refined Craftsman-style details with the single-wall, board-and-batten construction typical in plantation housing of Hawaii. The pitched roofs, U-shaped plan around an open courtyard, and large screened areas show how Army houses were adapted to tropical living by the integration of interior and exterior spaces. The screened lanai and hallway areas created a continuous indoor and outdoor circulation, as well as excellent cross-circulation throughout the house.

Examples of this Craftsman design, found only in Hawaii are evident at several Army installations, including Schofield Barracks, Fort Shafter, and Luke Field at Ford Island. The Fort Kamehameha houses were all originally painted or stained a dark color, likely a dark red, and had white trim; now they are painted a lighter color such as tan or beige.

Typical alterations include the installation of jalousie windows in the originally screened entry lanai, the hallways along the courtyard, and the store-rooms, as well as modernization of the kitchens and bathrooms. The tongue-and-groove wood flooring throughout each house has typically been covered with vinyl tile or sheet vinyl. Composition shingles now cover or replace the original wood shingles on the hipped roofs. The lattice that originally covered

Facility #	Facility or Design Name	Date
3323-3327, 3330-3333, 3335-3337, 3339-3341, 3343-3347, 3350, 3352-3355, 3357-3359	Smaller Corner-Entry Plan	1916
3328, 3329, 3348, 3349	Larger Center-Entry Plan	1916



Front view of Facility T-2, small house type
Source: Augie Salbosa Photography

the building foundation has been removed. Apart from these few modernizations, the houses retain much of the integrity of their original design.

Smaller Corner-Entry Plan

There are 30 houses of this design in the Fort Kamehameha neighborhood. The main entry is into a lanai that was originally screened but is now

typically enclosed with jalousies or other windows. The plan is U-shaped, with the living and dining rooms in the middle of the house. One wing contains the kitchen, pantry, servant's and utility areas, while the other wing has three bedrooms and a bathroom. Additional alterations in these smaller houses include removal of the wall between the storeroom and the adjacent servants' quarters to create one larger room, and conversion of an original shower to closet space.

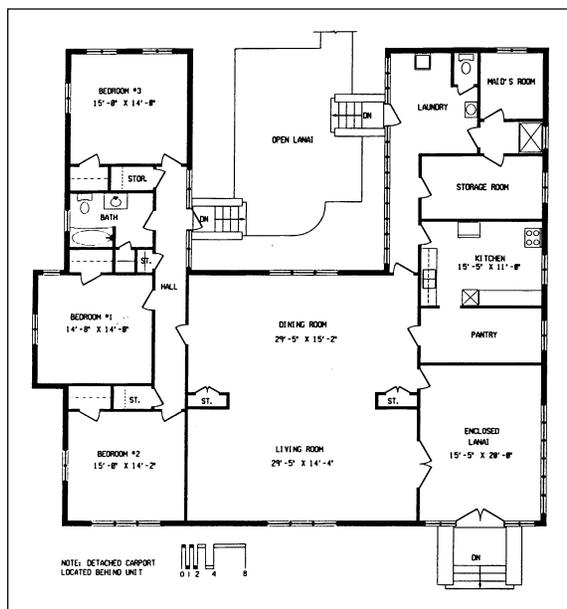


Facility 3324, small house type
Source: Augie Salbosa Photography



Interior of Facility 3339, small house type
Source: Augie Salbosa Photography

4-40



Corner entry floor plan



Interior of Facility 3339, small house type
Source: Augie Salbosa Photography



Interior of Facility 3339, small house type
Source: Augie Salbosa Photography



Facility 3329, large house type
Source: Augie Salbosa Photography



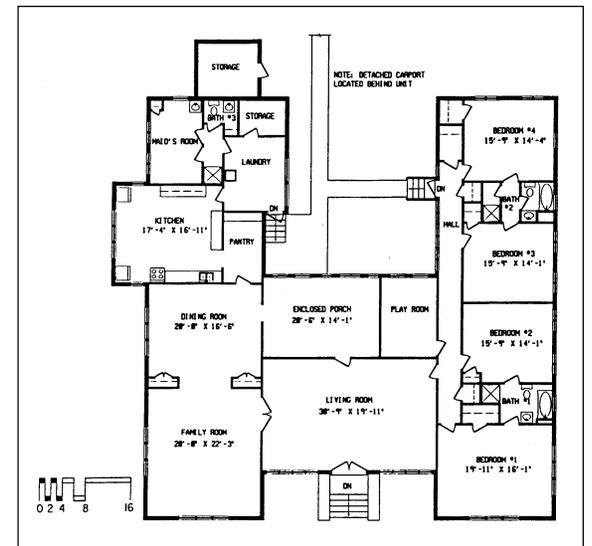
Interior of Facility 3448, large house type
Source: Augie Salbosa Photography

Larger Center-Entry Plan

Four houses have this larger U-shaped plan. The front entrance leads into a central lanai, which was originally screened on the front side and has windows facing the central back courtyard. One side wing of the house contains the living room, dining room, pantry, kitchen, servant's quarters with two bedrooms, and utility spaces. The opposite wing contains four bedrooms and two bathrooms. The bedrooms are accessed by a hallway along the courtyard that was originally screened.



Interior of Facility 3329, large house type
Source: Augie Salbosa Photography



Center-entry floor plan



*Interior of Facility 3329, large house type
Source: Augie Salbosa Photography*



*Interior of Facility 3348, large house type
Source: Augie Salbosa Photography*

CHARACTER-DEFINING FEATURES

Exterior Features:

- Wood-framed hipped roof.
- Exposed rafter ends (no fascia board).
- Lava-rock front wall foundation with small arched openings.
- Lava rock piers and cheekwalls at steps.
- Board-and-batten single-wall construction (12-inch wide vertical boards with rough battens on the interior and exterior).
- Pilasters with pendate or lattice detail.
- Bracket-supported roof extension with paired notched rafters over main entry.
- Wooden or concrete entry stairs with cheekwalls, typically lava rock with a concrete coping.
- Double-hung windows.
- Diamond-patterned wood muntins or leaded glass in the living and dining room windows.
- Screens at entry lanai or in the hallways along the interior courtyard.

Interior features:

- Wood floors.
- Board-and-batten interior wall and ceiling finish.
- Cased beams at living and dining room ceilings.
- Wall paneling in living and dining rooms.
- Ceiling moldings and baseboards.

- Picture moldings.
- Plate rail with ornate brackets in dining room.
- China closets with star-patterned muntins in dining rooms.
- Original French doors between the lanai and the living room.
- Five-panel and single-panel wood interior doors.
- Historic wood shelves or built-in cabinets in pantries.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Asphalt roof shingles (replacing original wood ones).
- Jalousie and fixed windows.
- Window A/C units.
- Flush and modern style doors.
- Modern hardware on doors and cabinets.
- Vinyl flooring or carpet.
- Over-painting of woodwork.
- Painting of glass around star muntins on doors or cabinets.
- Modern style kitchens and bathrooms.

Designs Similar to Those at Fort Kamehameha

Schofield Barracks

At Schofield Barracks, 97 Craftsman-style houses are found in two neighborhoods, the Canby area and General's Loop. The five different plans include one duplex structure, a corner-entry design that is the same as the smaller house plan at Fort Kamehameha, and three larger plans, one of which is the same as the larger plan at Fort Kamehameha. Constructed between 1919 and 1928, the Schofield houses have fireplaces but are otherwise the same design.

Luke Field/Ford Island

The Craftsman houses at Ford Island were built in 1922 from plans supplied by the U.S. Army Quartermaster Corps for officers' quarters for the Army Air Corps squadrons stationed at Luke Field on Ford Island. In 1936, the Army moved its Air Corps to nearby Hickam Field, now known as Hickam Air Force Base, and the Navy acquired these Craftsman houses.

There are four Craftsman-style house designs at Ford Island, which include two duplex designs. Eight of the 15 houses are the same plan as the Fort Kamehameha corner-entry design. Two houses are a center-entry design similar to but slightly different than the Fort Kamehameha plans. The remaining five are duplex structures. Despite minor plan layout differences and the use of gabled structure on portions of the roofs, the materials and architectural details are the same as the Craftsman-style houses at the other Army bases.

Fort Shafter

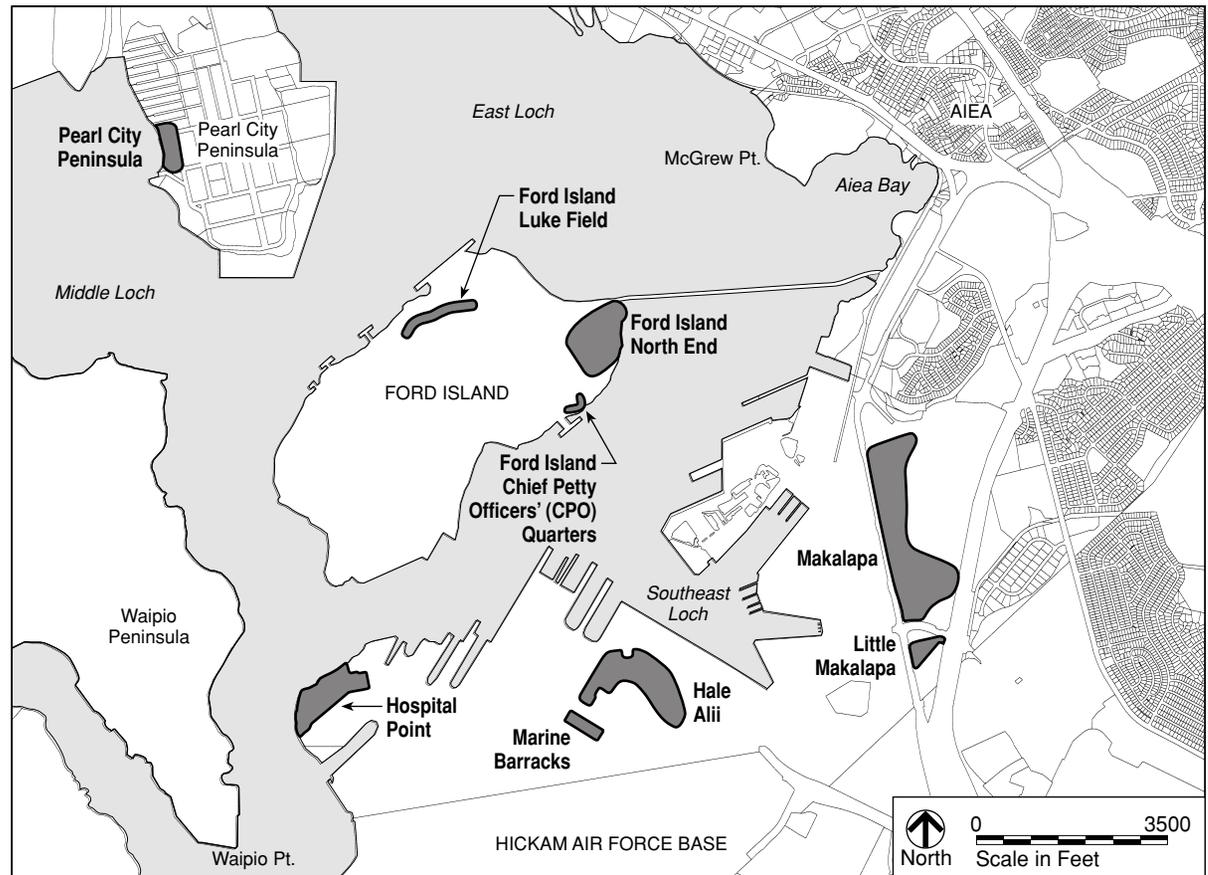
The Hawaii Ordnance Depot was completed in 1917 on the south side of what was at that time Fort Shafter. The Depot was a separate entity until 1955, when it became part of Fort Shafter. Four Craftsman-style houses were constructed in 1917 to serve as housing for the officers of the Ordnance Depot. Built from two of the standard designs used at the other Oahu Army installations, the houses appear to have the Schofield center-entry, five-bedroom design, and the Fort Kamehameha and Schofield center-entry, six-bedroom design. The houses were demolished in 1999.

Chapter 5

Historic Neighborhoods: Pearl Harbor Naval Complex

The Navy installation at Pearl Harbor was established in the first decade of the 20th century simply as a refueling and repairing station. The Pearl Harbor installation grew over the next four decades to include a number of different naval activities. The largest expansion, in area and in number of functions, was during WWII, and there has generally been consolidation of activities and reduction in acreage since then. The name of the installation and its various activities have changed over the years, with U.S. Naval Base Pearl Harbor being the best-known name. Pearl Harbor Naval Complex is the current name of the overall installation. The various historic neighborhoods reflect the growth of the installation as new activities were incorporated.

Hale Alii and Marine Barracks were the two initial Navy and Marine housing areas at Pearl Harbor. Built in 1913–1914, they were located close to the center of the base. Differences in layout and architectural styles of the Navy and Marine neighborhoods reflected the distinction maintained between the two services. Some one-story houses were added to the Hale Alii neighborhood in 1916, and the duplex was moved there in 1942. Other than those additions, changes to the neighborhoods



Map of Pearl Harbor Naval Complex

have been limited, except for garages and other outbuildings.

A hospital and radio station were established at Pearl Harbor by the mid 1910s; the earliest housing dates to 1915. The Hospital Point neighborhood grew slowly as houses were added in 1920, 1921, 1925, and 1929. After removal of the radio station to Lualualei in 1937, the Hospital Point neighborhood incorporated the adjacent radio station houses, built in 1917 and 1918.

Ford Island was established as a joint Army and Navy field in the late 1910s. The Army base was located on the west side of the island and was called Luke Field. Almost all of the Luke Field housing was built about 1922, in an undulating line that reflected the original shoreline. The Naval Air Station buildings were stretched along the southeast coastline. In 1923, three Navy Officers' houses were built at the northern end, separated from the Chief Petty Officers' (CPO) housing area. More officer and CPO housing was added in the late 1930s, but most of the 1930s CPO housing has been demolished.

The Makalapa neighborhood was built in 1940–1941 as part of the base expansion prior to WWII. With 91 houses and duplexes, this is the largest of the historic neighborhoods at Pearl Harbor. Unlike the other neighborhoods, which are built on relatively flat ground, this one is located on the outer slopes of Makalapa Crater. There is a consistency of materials and design details in this neighborhood, because all of the buildings were constructed in the same period and designed by the noted local architect, C.W. Dickey.

The 15 duplexes in the Little Makalapa neighborhood were constructed in conjunction with the Makalapa housing in the early 1940s as part of the build-up of facilities prior to WWII. The two housing areas were originally considered as one, although naturally separated into two neighborhoods by topography and distance as well as different housing occupants. This was officially recognized sometime prior to 1951, when this cluster of duplexes was referred to as Naval Housing Area IV. The buildings originally housed civilians, but by 1944 the Navy was using them for officers' quarters. Although also designed by C.W. Dickey, this grouping is distinguishable from the Makalapa housing. Due to the small number of buildings and because the two duplex types are so similar, Little Makalapa has a different appearance from the Makalapa neighborhood.

Unlike all of the other historic neighborhoods at Pearl Harbor, the Pearl City Peninsula neighborhood was built by the private sector for local residents. Use of the neighborhood by the Navy commenced after the December 7, 1941, attack, but acquisition was not completed until after WWII. The history of this cluster of six houses is the most complicated of all the Pearl Harbor historic neighborhoods. All of the other pre-WWII civilian housing on the Navy portion of the peninsula has been replaced with more modern units.

Hale Alii Neighborhood Significance

The Hale Alii neighborhood was built during the initial development of the Pearl Harbor Naval Base to house the officers of the Navy Yard. Quarters A (Facility 1000) is notable as the residence of the Commandant (Commanding Officer) of the 14th Naval District and the Navy Yard. This position was the highest-ranking naval officer in Hawaii until 1939, when the headquarters of the Pacific Fleet moved from California to Hawaii. At the time of the attack on Pearl Harbor, Rear Admiral C. C. Bloch, Commandant, 14th Naval District, was in residence.

The Hale Alii officers' quarters are excellent examples of early 20th century Craftsman-style architecture. The structures are among the largest and most architecturally elaborate of the residences at the Pearl Harbor installation. The structures are distinctive for their use of materials such as local lava rock (basalt), grooved wood shingle siding and roofing, and *ohia* (a local hardwood) flooring, as well as for their design. Significant design features include balustraded balconies, decorative wood brackets at the roofs and porticos, jigsawn rafters, multi-light wood doors and windows, ornamental interior moldings such as pedimented head casings at doors and windows, and free-standing and engaged columns/pilasters at the entry vestibule.

This housing area is relatively small with 22 buildings. The 12 single-family quarters reflect a consistent type of Craftsman-style housing developed over a relatively short period (1914–1919). The



*Hale Alii Road taken from east end, facing west. Facility 1039 (Quarters H) is to the left
Source: David Franzen Photography, July 2000*

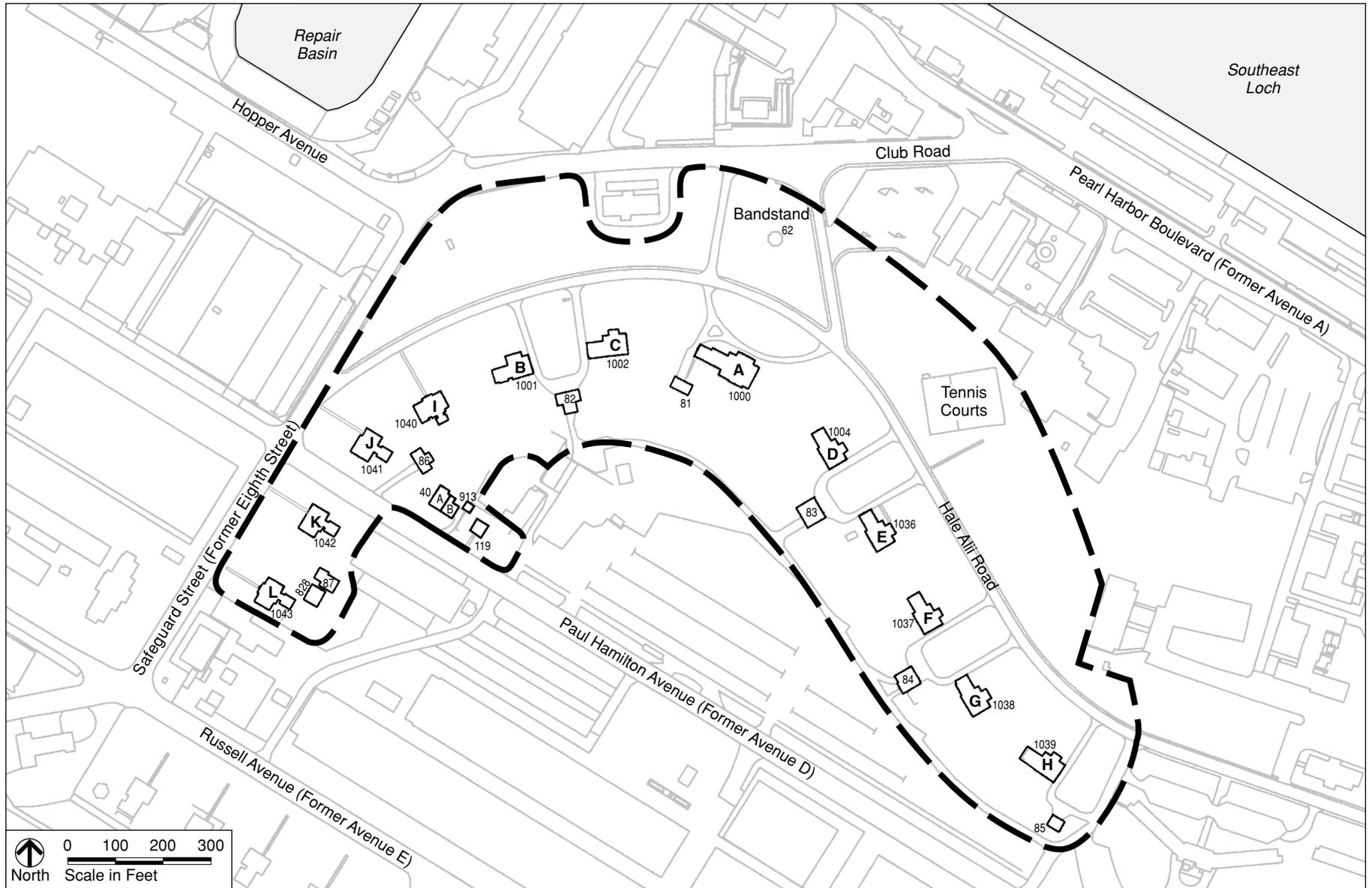
feeling of a unified neighborhood is reinforced through the use of common materials and similar details.

Neighborhood History

The area that was to become Hale Alii was part of the original 1902 land acquisition at Pearl

Harbor for the proposed Naval installation. The Commandant's Quarters (Facility 1000, Quarters A) and the two-story Officers' Quarters (Facilities 1001, 1002, 1004, 1036 to 1039, Quarters B to H) were constructed in 1914 along Hale Alii Road.

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



5-4

Hale Alii neighborhood

These structures faced the water (Merry Loch) across a wide stretch of then-marshy land. The one-story Officers' quarters (Facilities 1040 to 1043, Quarters I to L) were built in 1916 on either side of Avenue D (recently renamed Paul Hamilton Avenue), facing the Shipyard. The Hale Alii neighborhood originally abutted the Marine Reservation before the WWII expansion of the Shipyard separated these areas. Hale Alii's layout generally remains unaltered

from the time of its original construction. However, the surrounding areas have sustained considerable change, especially during WWII, but also in recent decades.

The first buildings erected at Hale Alii were the Commandant's Quarters (Facility 1000, Quarters A) and five other identical quarters for senior officers (Facilities 1001, 1002, 1004, 1036 and 1037, or Quarters B, C, D, E, and F). The Spalding



Quarters A, ca. 1920 (Facility 1000, Commandant's House)
 Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection

Construction Company of Portland, Oregon, completed these six buildings in April 1914. Two additional Senior Officers' Quarters (Facilities 1038 and 1039, or Quarters G and H) were completed in June 1914 by the Lord-Young Engineering Company of Honolulu, under a separate contract using almost identical plans.

5-5

Five wood-framed garage structures were also erected in 1914. The Senior Officers' Quarters share duplex garages with two storerooms (Facilities 82, 83, and 84), except for Quarters H, which has its own garage (Facility 85). The Commandant's garage (Facility 81) was originally built in 1914, but completely reconstructed in concrete brick in 1957.

In April 1916, four one-story quarters for junior officers (Facilities 1040, 1041, 1042 and 1043; or Quarters I, J, K and L) were constructed by General Contractors Bowler and Ingvorsen of Honolulu.



Looking along Hale Alii Road toward Shipyard area (facing southwest) with Facilities 1040 and 1041 (Quarters I and J) at left
 Source: David Franzen Photography, July 2000

Outbuildings (Facilities 86 and 87) were built behind these structures soon thereafter and were formerly used as servants' quarters. In the 1940s, carports were added to these outbuildings. Another outbuilding added to the neighborhood in 1918 was a gardener's office and tool shed (Facility 119), which has distinctive curved eaves at the corners of its hip roof.

By 1920, a YMCA was located at the intersection of Hale Alii Avenue and North Road near the Main Gate. In the late-1920s, recreational facilities, including a swimming pool, tennis courts and an octagonal boxing ring, were constructed in the Hale Alii vicinity. A baseball diamond was located on Fourth Street (now Eighth Street) across from two of the Junior Officers' quarters (Facilities 1042 and 1043). All these recreational facilities were removed or reconstructed in new locations during WWII. The 1936 bandstand (Facility 62) remains in the open space between the Hale Alii houses and the shoreline.

5-6



Quarters L and K and Facility 87, ca. 1916 (one-story Officers' type and outbuilding)
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection

The shoreline along the south side of Merry Loch remained in its natural irregular configuration until World War II, when additional berthing facilities were required. By 1945, the East Quay waterfront (Facilities B22 to B26) had been completed along the shoreline fronting the Hale Alii housing area. In addition, a new road, Avenue A (recently renamed Pearl Harbor Boulevard), separated the housing from the waterfront. The entire base expanded rapidly to accommodate wartime functions. Despite the alterations in the surrounding areas, the Hale Alii neighborhood has changed very little. The main change during WWII was the addition of air raid shelters, casualty stations, and Facility 40 to the area.

Facility 40, now a duplex quarters, was relocated to Avenue D circa 1942. This building was originally constructed in 1919 somewhere in the Navy Yard (Mariani & Associates 1987: 150). Most



Two-story Officers' Quarters, ca. 1920
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection

likely, this building was originally constructed as Facility 124, noted on a 1929 map as a "storehouse," located in the Shipyard along Avenue F. This structure is approximately the same size as the present duplex. A 1932 map identifies this structure as offices for "Public Works Surveyors and Inspectors." Facility 40 first appears in its present site on an October 1942 location plan for the "Survey Office (Former Dry-dock Field Office)." By mid 1943 this structure had been converted to a five-room "Yard BOQ" for Duty Officers. In 1947 the building was reconfigured as a duplex quarters for officers.

Facility 828, a garage behind Quarters L (Facility 1041), is listed with a 1942 "year built" in the Navy database, but it is not on the January 1, 1944 map of the base, and no facility had a number higher than 705 on that map. It is shown on its present site on the 1951 map. Given its facility number, it is likely to be a late 1940s building. It is not clear why this additional garage was needed, since there were carport additions to Facility 87 for Quarters K and L.

In 1952, Quarters B (Facility 1001) was partly reconstructed after a fire burned the second floor and roof. A new wood-shingle, side-gable roof was built in place of the destroyed multi-hipped roof and dormers. Jalousie windows replaced the original double-hung and casement sash at the upper floor. The interior stair was rebuilt and new wall and ceiling materials were installed at the upper level. The lower floor of the structure was generally left untouched by the fire.

Major Landscape Features of Neighborhood

The major landscape feature of the Hale Alii neighborhood is a mature landscape set within a large open space. The neighborhood's hierarchical layout is along a curvilinear roadway, which acts as the primary public access. The Commandant's quarters at the prominent point of the curve is flanked by the lesser-ranked Officers' quarters. This roadway, Hale Alii Road, along with each of the driveways and front yards of the other quarters, are on a more formal layout. Royal palms line the driveways and one side of the street, while large canopy trees such as monkeypods and banyans line the opposite side. These large canopy trees provide shade for the sidewalk, which is only on one side of the street. Each of the quarters is set back quite a distance from Hale Alii Road. This open space setback in the front yards, along with the streetscape plant palette, are the linking elements throughout this neighborhood.

As is usually the case for this period of neighborhood design, a less public access runs through the back of the neighborhood, joining the garage



Hale Alii neighborhood landscape
Source: Belt Collins

structures. This utilitarian access and the adjacent back yards are more informal in nature. Large canopy shade trees informally planted provide the unifying element for this access. The foundation planting around each of the quarters are of a tropical palette, with colorful shrubs and flowering trees. Between the quarters are monkeypods and banyans with a few flowering accent and fruit trees set within an open lawn. These trees provide shade and a sense of privacy between each of the buildings. They also help to create a unique character for each of the individual dwellings. Flowering ledges lining the

front edge of each of the yards and along the driveways add to the formal feel of the front yard space.

The open space fronting Hale Alii Road acts as an extension of the front yard open space creating a park-like feel throughout the neighborhood. Certain vantage points along the roadway afford views through the open space of Pearl Harbor and back toward the Koolau Mountain Range. Set within the open space are community and recreation elements. A bandstand structure fronts the Commandant's quarters, and an enclosed tennis court is also set within the open space.

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



5-8

Landscape plan

Hale Alii Housing Designs

Hale Alii is an excellent example of a military residential community. The Hale Alii neighborhood contains 13 officers' quarters and nine garage/out-building structures. The residences were constructed in the Craftsman-style within a five-year period (1914-19). The majority of garage structures were also constructed during this time. Because of its relatively short development period, there is a continuity of architectural style and detail.

The four housing designs in this neighborhood are: Commandant's Quarters, Officers' Quarters two-story design, Officers' Quarters' one-story design, and Officers' Quarters Duplex. The following lists of features for each design were prepared from field notes and photos taken before the 2001–2002 Wholehouse Revitalization project at Hale Alii was undertaken. That project involves renovation work in all the units at Hale Alii, except for the Flag Quarters (Facility 1000/Quarters A and Facility 1002/Quarters C).

Commandant's Quarters (Facility 1000, Quarters A)

This is the most ornate and one of the most architecturally significant houses at Pearl Harbor. It retains most of its original fabric, although a few changes to the house have been made over the decades, such as enclosure of the lanai in the two rear corners or the main block. Some early insensitive renovations have been partially rectified in recent years. One such project was the installation of a lava-rock veneer on the fireplace and removal of the terrazzo fireplace surround that had replaced the original lava rock laid in red mortar.

Facility #	Quarters Designation	Addresses	Facility or Design Name	Date
1000	A	6 Hale Alii Rd.	Commandant's Quarters	1914
1001, 1002, 1004, 1036-1039	B, C, D, E, F, G, H	8, 7, 5, 4, 3, 2, 1 Hale Alii Rd.	Officers' Quarters Two-Story Design	1914
1040, 1041, 1042 & 1043	I, J, K & L	9, 10 Hale Alii Rd. & 1, 2 Safeguard St. (was 8th St.)	Officers' Quarters One-Story Design	1916
40	Units 40A & 40B	1, 2 Paul Hamilton Ave. (was Ave. D)	Officers' Quarters Duplex	1919 & 1942-47

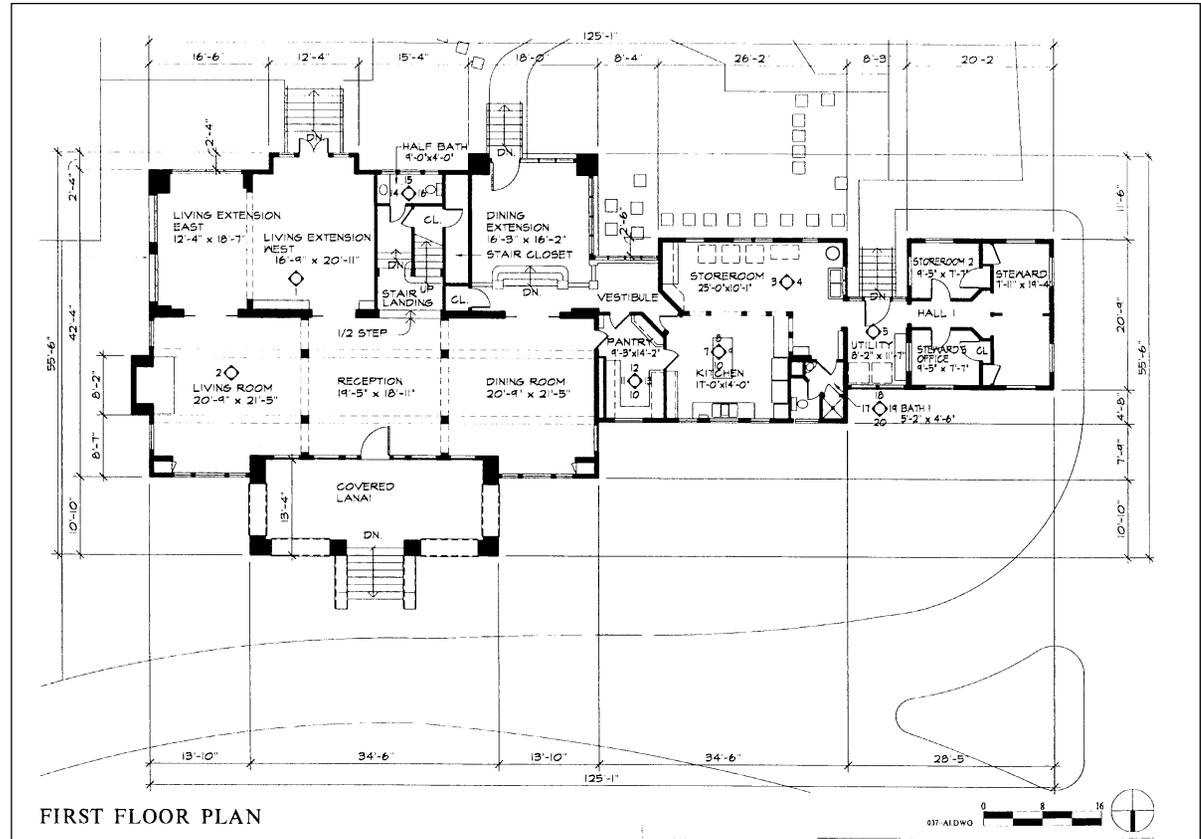


Front view of Commandant's Quarters (Quarters A, Facility 1000)
Photo: David Franzen Photography, July 2000

CHARACTER-DEFINING FEATURES OF FACILITY 1000

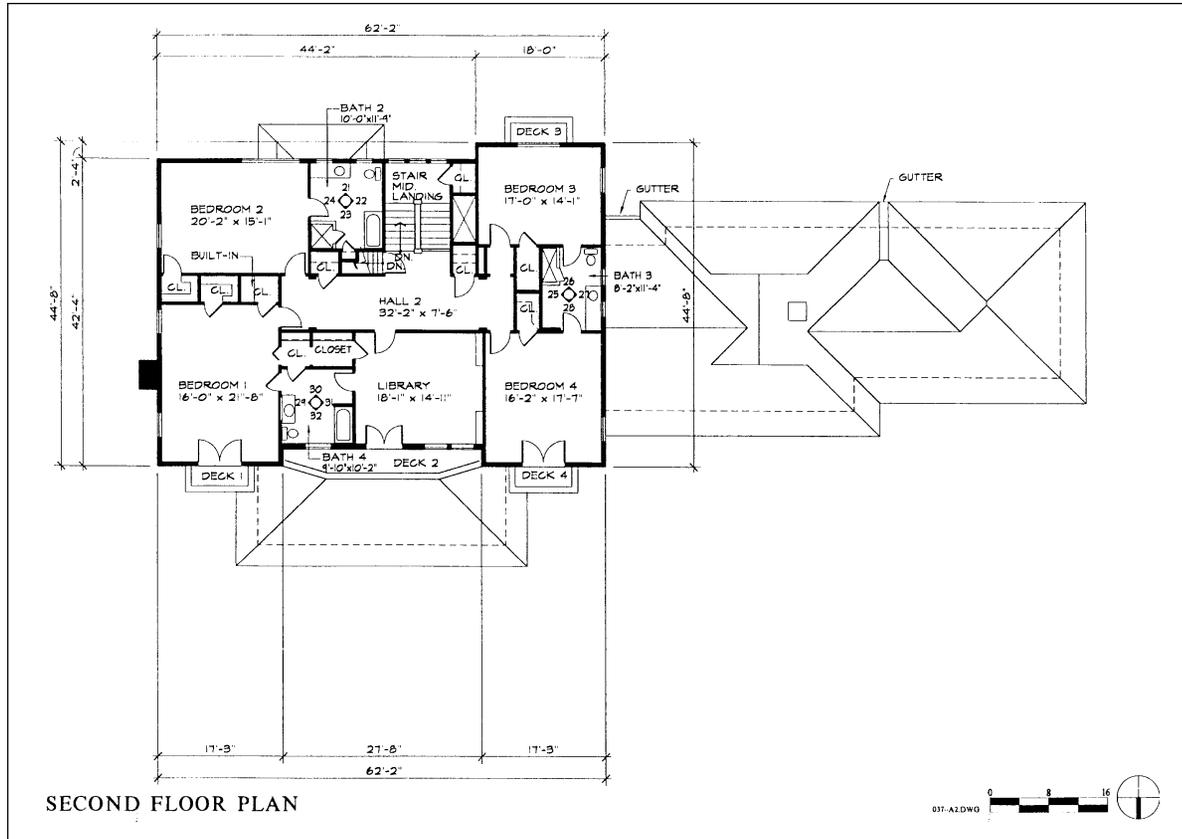
Exterior Features:

- Two-story main house with projecting lava rock porch and single-story side wing.
- Lava rock pier foundation; wood-frame structure.
- Stepped lava rock cheekwalls with concrete caps at sides of front porch stair.
- Butt shingle siding at main block and kitchen section; board-and-batten siding at servant's bedroom wing.
- Wood-shingle, multi-hipped roofs.
- Hipped ventilation dormers on all sides of main roof.
- Gablet vents on two sides of kitchen roof.
- Notched and jigsawn rafters at main block; plumb-cut rafters at side wing.
- Tongue and groove eaves sheathing.
- Two lava rock chimneys.
- Roof overhang with paired decorative brackets at center bays of upper floor, front and rear.
- Bands of screening under eaves for ventilation.
- Twenty-four-light door and 14-light sidelights at main entrance.
- One inset and three outset second-floor balconies.
- Distinctive massive balusters on outset balconies.
- Original doors to two of outset second-floor balconies consisting of paired 15-light French doors with transoms.



Commandant's Quarters first floor plan

- Original doors to inset second-floor balcony consisting of paired multi-light French doors, without transoms.
- Single and paired wood-sash casement windows, of various sizes and groupings, often with multi-light transoms (most common window type).
- Other original wood-sash windows consisting of 6/1 and 8/1 double-hung at main block plus 6/6 and 10/10 double-hung in kitchen, and paired 6-light sliding in original servants' rooms.
- Large and complex window in stairwell.



Commandant's Quarters second floor plan

Interior Features:

- *Ohia* wood floors at lower floor of main house.
- Douglas fir floors in dining room and upstairs hall.
- Composition-board walls and box beam

- coffered ceilings in living room, dining room, and entry.
- Pilasters along the walls of those spaces and free-standing Greek Revival columns defining the entry.
- Tongue-and-groove walls and ceilings in servant's wing and kitchen.



View of living room from entry, looking towards fireplace
Source: David Franzen Photography, July 2000

5-11

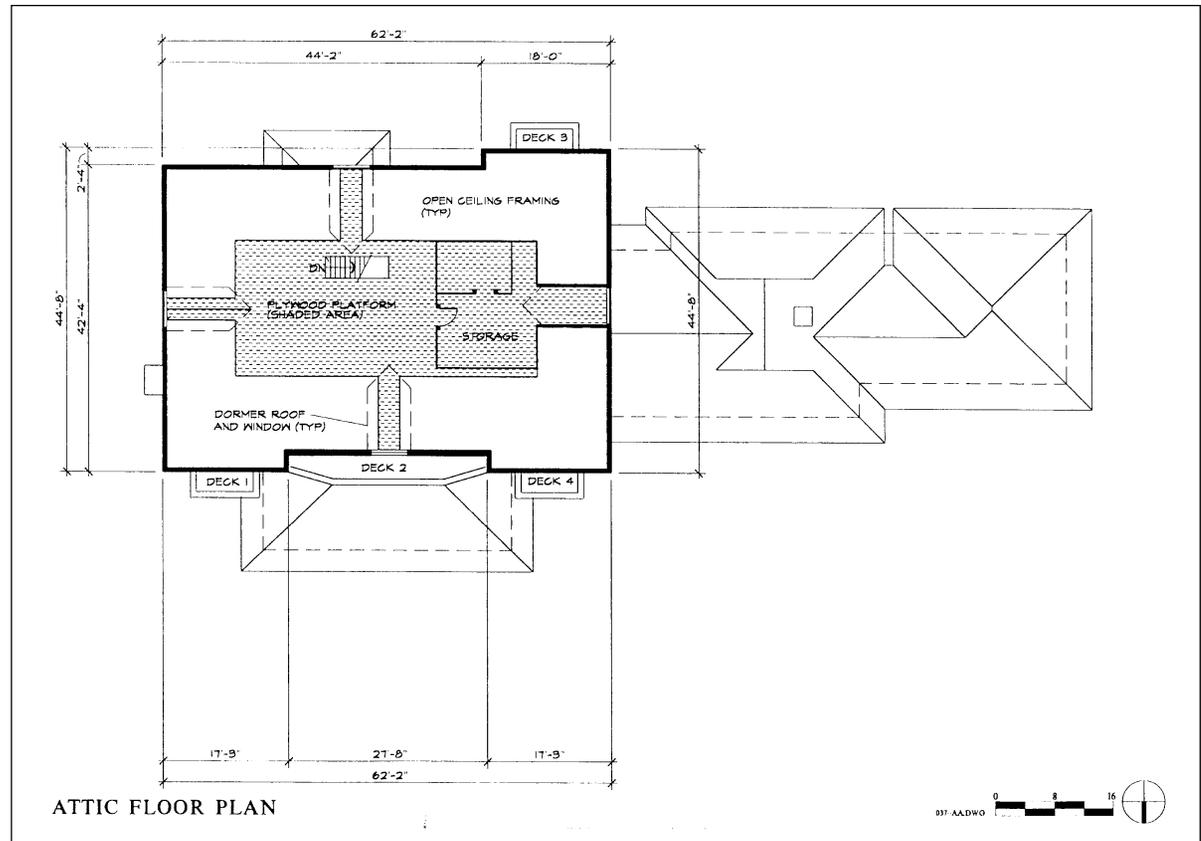
- Composition-board walls and ceilings of canec panels with beveled edges and mitered-corner pattern in bedrooms.
- Wide wood door and window casings, some pedimented and often with shouldered architraves.
- Cornice moldings and 8-inch high baseboards on first floor.
- Picture molding at upper floor.
- Half-turn open stringer staircase with tapering balusters and newel posts (all square in cross section).
- *Ohia* handrail and stair treads (bottom one extended and rounded).
- Pilasters and box beams at ends of upper-floor hall.

- Coved plaster ceiling-to-wall detail in upstairs bathrooms.
- Wood-paneled doors with glazed transoms and beveled mirrored closet doors in bedrooms.
- Paired 10-light pocket doors with screens between living room and both rear corner lanai.
- Similar pocket door (like a joined pair) between living room and original library.
- Doors with original brass hardware, most with glass knobs.
- Bathroom doors with privacy flap over keyhole.
- Storage cabinet on one side of front windows in both living room and dining room.
- Original cabinets in Butler's Pantry.
- Original corner sink in bathroom near utility room.
- Exterior board-and-batten and butt shingles evident at walls of enclosed lanai at rear corners of main block.
- Multi-light transoms over doors to pantry and kitchen from main block.
- Railing in rear dining room (former lanai) with same massive balusters as outset balconies.

5-12

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie windows in enclosed lanai near living room and in lower dining room.
- Glazed door with jalousie sidelights at rear door from library (replaced window seat and triplet of double-hung windows).
- New glazed door at rear entry to one-story wing.



Commandant's Quarters attic floor plan

- Modern flush door in kitchen.
- Window A/C units.
- Ceramic tile on concrete at front and rear stairs.
- Doors removed between library and lanai.
- Kitchen and most bathrooms remodeled.
- Built-in china cabinet missing in dining room.
- Wall removed between former servants' bedrooms #2 and #3.
- Plexi-glass infill at window A/C unit in bedroom #3.
- Carpet in upstairs bedrooms.
- Vinyl flooring in one-story wing.

Officers' Quarters Two-Story Design (Facilities 1001, 1002, 1004, 1036 to 1039, Quarters B to H)

As noted in the history of Hale Alii, two of the houses of this design were built from almost identical plans a few months later than the five others. Quarters G and H (Facilities 1038 and 1039) were described as “identical with the five Officers’ Quarters, B, C, D, E, and F . . . with the following exceptions: bathroom floors are tiled with vitreous tiles instead of being covered with cork carpets; and main rooms of the first stories have *ohia* wood floors instead of Douglas fir” (U.S. Navy, Bureau of Yards and Docks, c. 1914). None of the original bathroom floors (cork or tile) remain, and several of the earlier houses, as well as Quarters G and H, now have *ohia* floor in the main rooms. Assuming the Bureau of Yards and Docks report is correct, the *ohia* in the other houses must have been installed later.

Although not mentioned in the Bureau report, there are other differences between Quarters G and H and the other houses of this design, including the windows in the lower main block. Some changes have been made to all these Officers’ quarters, including enclosure of the front corner lanai with casement windows and removal of the original railings. There are also slight variations between these Officers’ quarters because different renovation and repair projects have been done over the decades since construction. Not all of the listed character-defining or character-detracting features are seen in each house. For instance, the servant’s bells and call box are extant in only a few houses.



View of two-story Officers' Quarters, Facility 1002, from driveway
Source: David Franzen Photography, July 2000

Quarters B (Facility 1001) has the least original fabric because the second floor was entirely rebuilt after a fire in 1951. There was some attempt to recapture some of the original character of the house, such as rebuilding the main stair with black walnut treads and rail, a wood that is similar to the rare local *ohia*. However, the second-floor interior finishes, windows, and roof were rebuilt with quite different materials and design. It was decided to rebuild with a gable roof, rather than to replicate the original complex hipped roof with hipped dormers. In the 2001–2002 Wholehouse Revitalization project, the second-floor jalousie windows of Quarters B are

being replaced with windows more closely matching those of other houses of this design.

CHARACTER-DEFINING FEATURES OF OFFICERS' TWO-STORY DESIGN

Exterior Features:

- Two-story main house with screened projecting lava rock porch and single-story side wing.
- Lava rock pier foundation; wood-framed structure.
- Stepped lava rock cheekwalls with concrete caps at sides of concrete stair to front porch.

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- Butt shingle siding at upper floor; board-and-batten siding at lower floor and side wing.
- Wood-shingled multi-hipped roofs; shed roof over front porch.
- Hipped ventilation dormers at front and rear of main roof.
- Bands of screening under eaves for ventilation.
- Jigsawn rafters at main block; plumb-cut rafters at side wing.
- Tongue-and-groove eaves sheathing.
- Two lava rock chimneys.
- Band of S-shaped joist tails between first and second floors.
- Six-light transom over paired entry doors with single light over two panels.
- Rear door of main block with three lights over single panel.
- Wood stair, deck, and railing with tapered square spindles at rear entry to wing.
- Several types of wood windows, with varying number of lights, and many with multi-light transoms; paired and single casement, double-hung, fixed, and sliding sash.
- Pair of triple-hung, 12/12/1, wood-sash window at stairwell.
- Wood awnings added over some windows (installed soon after original construction).

Interior Features:

- *Ohia* wood floors in main rooms of lower story.
- Composition-board walls and box beam coffered ceiling in living room, entry, and

dining room.

- Pilasters along walls of living room and entry.
- Fireplace with lava rock surround, bracketed wood mantel, and paneled chimney breast.
- Wide wood door and window casings, some pedimented and often with shouldered architrave.
- Cornice molding and 8-inch high baseboards at lower floor.
- Original glass-front china cabinet in dining room with flat muntin grid.
- Pair of ten-light pocket doors between living room and library, and between dining room and front corner lanai.
- Window seat and built-in bookcases in library.
- Vertical tongue-and-groove walls and canec ceilings at one-story wing.
- Built-in wood medicine cabinets in some bathrooms.



Facility 1002, view of library from living room
Source: David Franzen Photography, July 2000

- Separate butler's pantry.
- Fold-down ironing board in laundry room.
- Servants' call box in kitchen, and servants' bells in living room, library, and lanai.
- Half-turn staircase with open stringer, with tapering balusters and newel posts (all square in cross section).
- *Ohia* handrail and stair treads (bottom one extended and rounded).
- Servants' stair from dining room to landing of main stair.

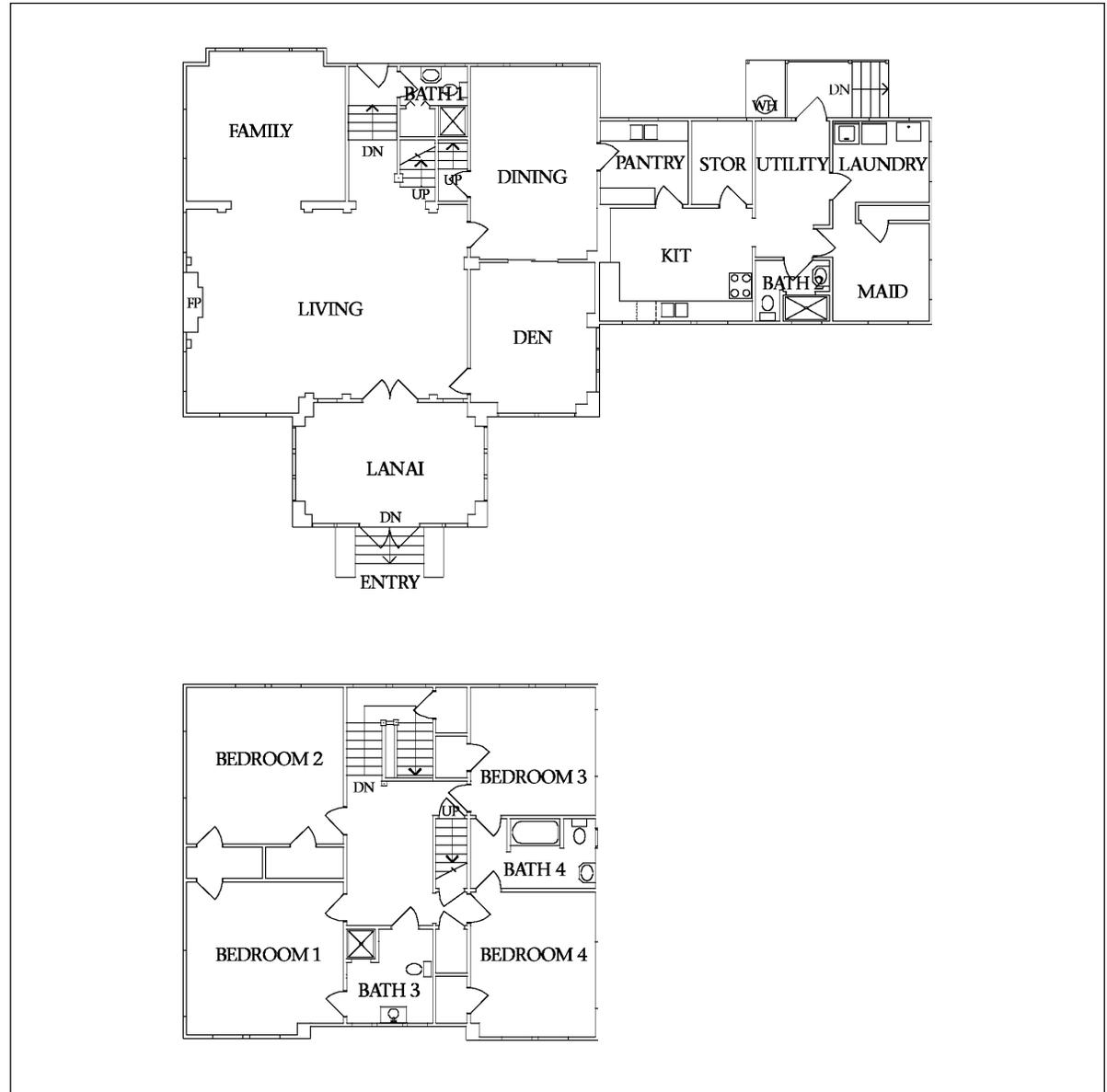


Facility 1002, view of stairwell and door to rear yard
Source: David Franzen Photography, July 2000

- Stair to attic from upper floor hall.
- Douglas fir floor in upper story.
- Composition-board walls and ceilings of canec panels with beveled edges and mitered corner pattern.
- Picture molding in upper floor rooms.
- Two-panel wood doors with one-light hopper transoms, and glass doorknobs in bedrooms.
- Other upper-floor doors similar but without transoms.
- Plaster walls and period medicine cabinets in upper baths.

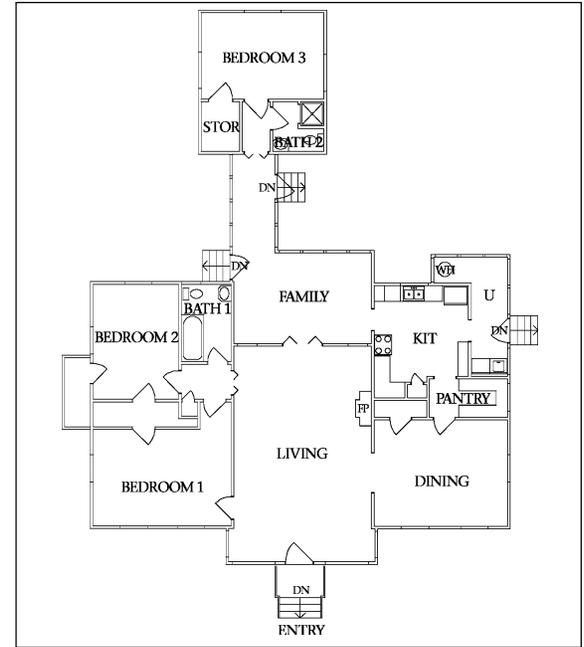
ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie and other non-original windows.
- Window air-conditioning units.
- Expanded metal lath screens between lava rock piers.
- Missing sliding pocket doors between front corner lanai and adjacent rooms.
- Missing or altered built-in dining room cabinet.
- Vinyl flooring and/or wall-to-wall carpeting.
- Remodeled kitchens and bathrooms.
- Modern light fixtures (interior and exterior).
- Non-original hardware and painted original hardware.
- Modern interior shutters.
- Over-painting of interior woodwork.
- Non-original doors.



Two-story Officers' Quarters first floor plan (above) and second floor plan (below)

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Officers' Quarters one-story design floor plan

*Side and rear view of Facility 1042, from Paul Hamilton Avenue (formerly Avenue D) with bedroom 3 wing at left
Source: David Franzen Photography, July 2000*

Officers' Quarters One-Story Design (Facilities 1040 to 1043, Quarters I to L)

These four one-story houses were built a few years after the two-story Officers' quarters. Although originally designated Junior Officers' quarters, they have long been the residences of the highest-ranking Navy officers in Hawaii. During World War II these houses were occupied by the Shop Superintendent, the Aid to the Commandant, the Commanding

General of the Marine Forces, and the District Medical Officer. These quarters are T-shaped in plan, with the leg of the T consisting of a bedroom and bathroom connected to the main house by a hallway. This rear bedroom and bathroom were originally a free-standing structure, probably servant's quarters. Each was connected to the main house during WWII, as shown by historic aerial photographs.

In addition to the connecting hallway, some other changes have been made to all four of these officers' quarters, including the enclosure of the front and rear lanai and the rear hallway. These enclosures added non-original windows. The windows and doors of the front lanai do not detract from the historic character of the houses, but the jalousie windows and trapezoidal transoms in the rear hallway and lanai are obviously modern.

There are slight variations between these four officers' quarters because of different renovation and

repair projects that have been done over the decades since construction. Not all of the listed character-defining or character-detracting features are seen in each house. For instance, in Quarters I (Facility 1040) the lava rock chimney and fireplace have been replaced with concrete ones, but the house does have its original lava rock hearth.

CHARACTER-DEFINING FEATURES OF OFFICERS' ONE-STORY DESIGN

Exterior Features:

- Single-story, wood-framed house with T-shaped plan.
- Lava rock pier foundations at the main part of the house; wood posts on concrete piers at rear wing.
- Board-and-batten siding, with double-wall construction on main portion and single-wall on rear wing.
- Wood watertable around entire perimeter.
- Multi-hipped wood-shingled roofs.
- Central lava rock chimney.
- Exposed plumb-cut rafters and tongue-and-groove eaves sheathing.
- Main entry door, centered in facade, with two lights over lower panel.
- Porch enclosed with two-light casement windows with transoms.
- Original wood windows with paired ten-light casements in main house and paired six-light sliding windows at rear bedroom.
- Wood door and window trims.

- Straight-run wood stairs with simple board railings to all four doors.
- Screened laundry porch off kitchen.

Interior Features:

- V-groove tongue-and-groove walls (and some ceilings) in the main house.
- Board and batten walls and ceilings in rear wing.
- Canec ceilings, some with mitered corner patterns.
- Wood baseboards and picture moldings.
- Lava rock fireplace and hearth with wood bracketed mantel.
- Wood five-panel doors with period hardware (brass or glass door knobs).

- Wood door and window casings.
- Largely historically and architecturally intact floor plan.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie windows, typically in rear lanai and hallway.
- Fixed transoms on rear lanai, especially trapezoidal ones.
- Composition roll roofing on front and rear lanai and hallway.
- Expanded metal lath infill screens between piers.
- Chimney and fireplace of concrete in Quarters I (Facility 1040); brick chimney in Quarters J (Facility 1041).
- Vinyl flooring.
- Modern plumbing and electrical fixtures.
- Some modern interior and exterior doors.

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*Facility 1042, view of dining room, looking toward living room through archway with pantry door at right
Source: David Franzen Photography, July 2000*



5-18 *Front and side view of Facility 40, showing entry to Unit A*
Source: David Franzen Photography, July 2000

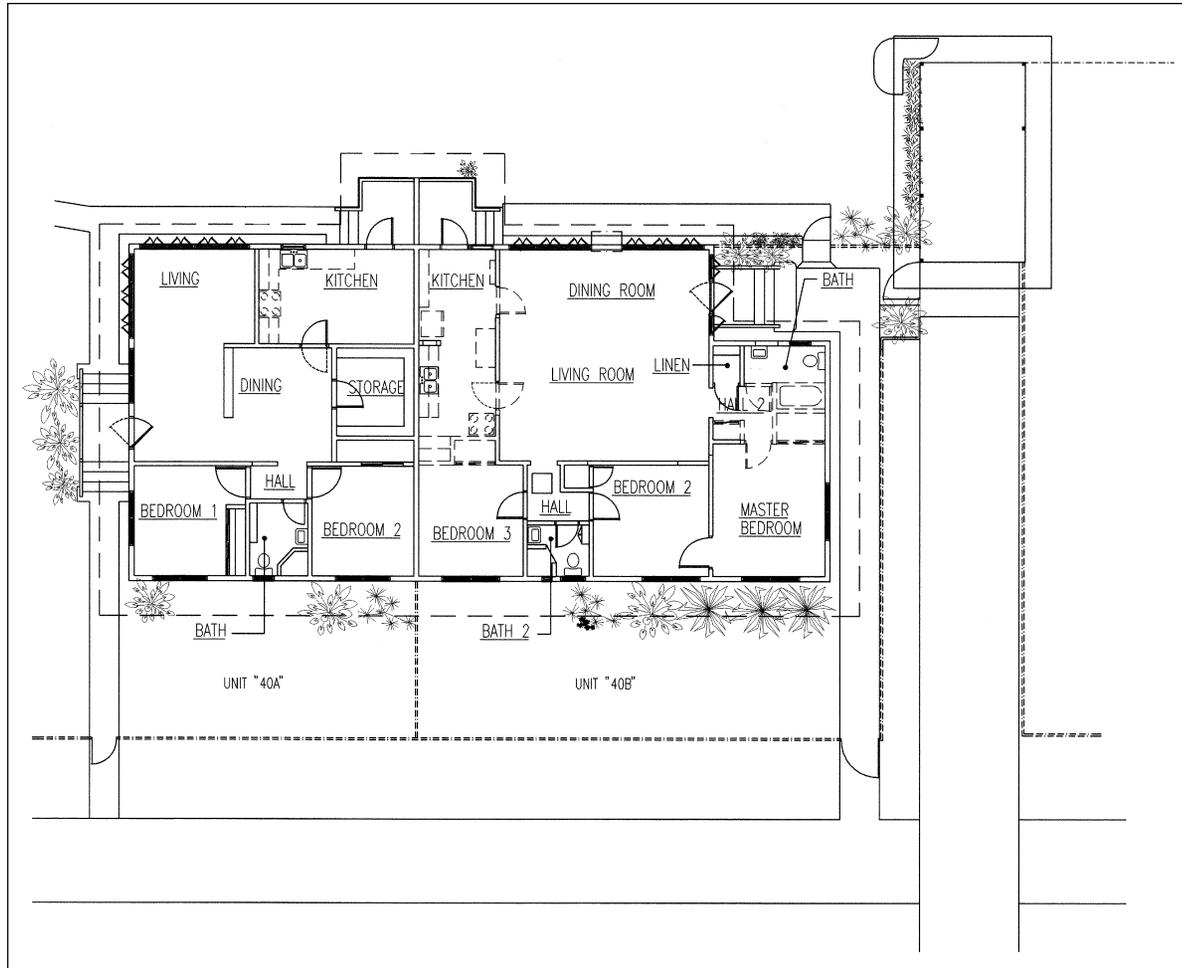


Rear view of Facility 40
Source: David Franzen Photography, July 2000

Officers' Quarters Duplex (Facility 40, Units 40A and 40B)

This building (Facility 40) is the only one in the neighborhood that was not originally residential in design and use. It was originally built in the Shipyard, perhaps as a storehouse, and was moved to this site about 1942, where it was used briefly as an office, then as a five-bedroom Bachelor Officers' Quarters. It was converted to a duplex in 1947. The WWII directive for conservation of building materials was one of the reasons for relocation, rather than demolition of this building in the 1940s. The need for housing, due to the greatly expanded population of the Pearl Harbor installation, led to the conversion to quarters. After WWII there was a demand for family housing, so the building was converted to a duplex.

It is the only residential building oriented to Paul Hamilton Avenue (formerly Avenue D) in the Hale Alii housing area. A hibiscus hedge and picket fence line the street. The back yard has numerous large trees and opens into back yards of other Hale Alii houses.



Floor plan of Facility 40

CHARACTER-DEFINING FEATURES OF FACILITY 40

Exterior Features:

- Single-story wood-framed duplex.
- Wood post and concrete pier foundation.
- Board-and-batten siding.
- Wood watertable at bottom perimeter.
- Gable roof with cross-gables at the rear.
- Plumb-cut rafters ends.
- Tongue-and-groove eaves sheathing.
- Main entry doorways located in west gable end and at rear of building five panel doors with wood screen doors.
- Wood stairs with simple board railings to entry and kitchen porches.
- Numerous window types: mostly 1/1 double-hung sash and single or paired three-light casements.
- Wood window and door casings.

Interior Features:

- Walls and ceilings of large canec panels, with beveled-edge details, except that one wall of kitchen in Unit 40B is board-and-batten.
- Wood chair rails, picture moldings, baseboards, and crown moldings.
- Mostly five-panel wood interior doors, but one closet has paired sliding one-panel doors.
- Built-in linen cabinets in bathrooms.
- Period kitchen cabinets.
- Wood window valances with decorative scoring.



Facility 40 Unit B kitchen
Source: David Franzen Photography, July 2000



Facility 40 Unit B, interior of master bedroom
Source: David Franzen Photography, July 2000



Facility 40 Unit B, interior of living room
Source: David Franzen Photography, July 2000

- Wood thresholds.
- Unit 40B retains wood floors, except in kitchen and bathrooms.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Composition shingles.
- Jalousie windows.
- Interior screens for casement windows; horizontal divider does not line up with window muntins.
- Water heater at rear porch.
- Expanded metal lath covers crawl space.
- Exterior screen over gable louvers (could be placed inside).
- Modern doors and modern hardware on original doors.
- Vinyl tile flooring.
- Bamboo bar in living room of Unit 40A.
- Electric and plumbing fixtures.
- Over-painting of woodwork.

Marine Barracks Neighborhood Significance

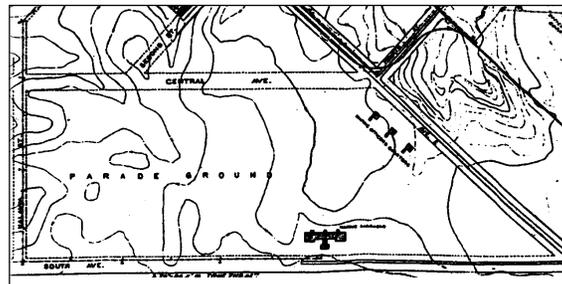
The earliest housing at the Marine Barracks, Pearl Harbor was constructed in 1913 (Facilities 201–203) and 1914 (Facility 204) as part of the initial permanent Navy installation. This neighborhood is also significant as part of the oldest Marine garrison in Hawaii. The architecture of these quarters for Marine Officers is unique, both within Pearl Harbor and in Hawaii. The three single-family houses were designed by a noted New York and Washington, D.C., architect, Jules H. de Sibour, and the duplex was designed by the Navy Bureau of Yards & Docks, with many similarities to de Sibour's design. No other pre-1950 military houses in Hawaii were designed in this Italian Renaissance style.

Neighborhood and Marine Reservation History

Early maps show that the original Marine Reservation at Pearl Harbor was slightly larger than the complex is today (see map at right). The western boundary was Halawa Street, no longer extant, which was located further towards the coaling dock than the current western edge (Port Royal Street, formerly Seventh Street). The eastern portion was wedge-shaped, bounded originally by South Avenue and Avenue E (now renamed Russell Avenue). Salvor Street (formerly Ninth Street) was later cut through the corner of the wedge and Public Works Center Transportation Division was assigned the triangle of land at the corner.



*Overview showing four houses and front lawns
Source: David Franzen Photography, January 2001*



*Excerpt from "Map of Yard, U.S. Naval Station Pearl Harbor, T. H. 1912", showing original Marine Reservation.
Source: Pacific Division Naval Facilities Engineering Command*

The first buildings planned for the Marine Reservation were Officers' housing and a barracks. Housing was the first priority because the Marines stationed on Oahu since 1904 had been sheltered in a coal shed and tents. The first bids for these buildings submitted in 1910 were higher than the appropriated amounts, so plans were redrawn and rebid (Marine Barracks Hawaii n.d.-a: 13). In March 1912, a contract was awarded for construction of the concrete Marine Barracks building (Facility 221) and Officers' Quarters (Facilities 201–203). Completed in 1913, these buildings were designed by Jules H. de Sibour, an architect trained in Paris who practiced in New York and Washington D.C.

(Goode 1988: 136). The Double Officers' Quarters (Facility 204) was completed in 1914. Four buildings, labeled as servants' quarters but probably also incorporating garages, were built behind these quarters by 1920 along a secondary street, now called Marine Barracks Way (these original buildings were replaced with carports in 1953).



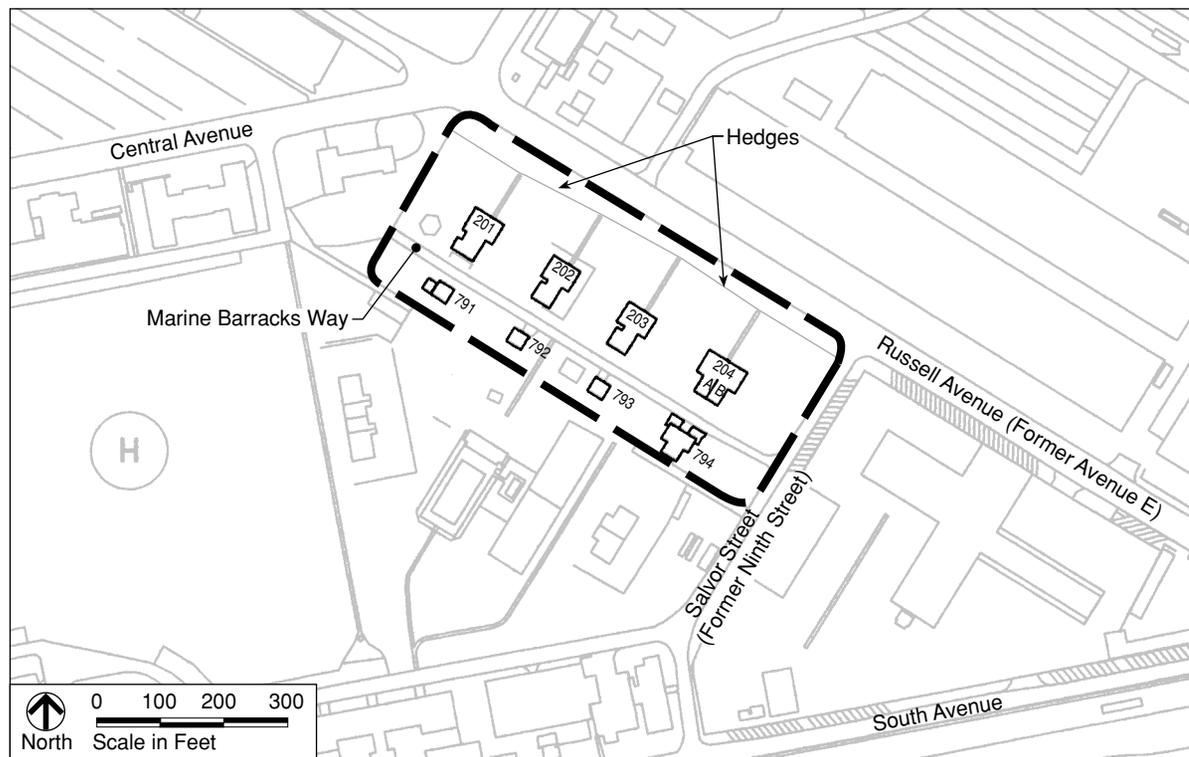
Marine Corps Officers' Quarters with the shipyard complex in the distance, February 1913

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, PHOG No. 84



Facility 204, Double Officers' Quarters, October 1914

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, PHOG No. 553



Marine Barracks neighborhood

The annual report of 1914 for the Marine Barracks noted that the gymnasium/storehouse and the post exchange were originally to have been built about that year (Marine Barracks Hawaii n.d.-a: 3). However, despite the appropriations and the need for these buildings, they were not erected until four or five years later. Thus, although they date to the WWI period, these buildings do not really have a connection to that war. In 1918, the gymnasium and storehouse was completed (originally consid-

ered one building but after 1941 listed as Facilities 222 and 223). The Marine exchange (Facility 272, long since demolished) was built about 1919.

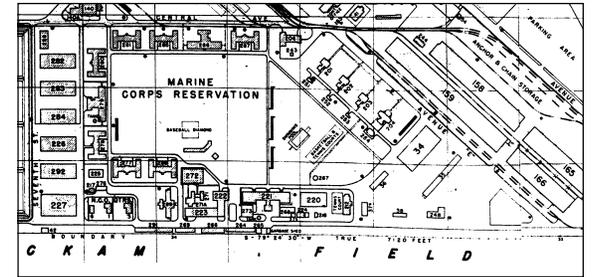
Before WWI the only other buildings constructed on the Marine Reservation were a laundry, stable, and temporary storehouse (U.S. Naval Station 1916). All three of these were near the western boundary of the Marine Barracks area and have long since been demolished.

In the two decades between WWI and WWII, most of the construction undertaken at the Marine Barracks complex was concentrated near the main building (Facility 221). Another residential neighborhood with five houses for Non-Commissioned Officers (NCOs) was built along South Avenue. These were demolished in WWII, and a large laundry building was erected on the site. Most of the Marine Barracks area remained open parade grounds through the 1930s.

In 1939, the Marines began to strengthen their forces in response to the war in Europe. A call for bids was advertised to construct a 750-man Marine barracks unit at Pearl Harbor. This set of buildings was to house one of the new “mobile defense battalions” of Marines from San Diego. At first only one mess hall/galley and four two-story barracks

buildings were planned (Advertiser 1939). Within a year a similar contract was awarded.

The Third Defense Battalion was the first group of Marines to occupy some of the new semi-permanent frame barracks in mid-1940. Seven barracks and two galley/mess hall buildings were erected between 1940 and 1941. These nine buildings (eight remain) were placed to the northwest of the original Marine Barracks buildings, along new roads (Russell Way and Long Way) that bordered the now-smaller parade ground. In September 1940, advance elements of the Third Defense Battalion left to establish defenses on Midway Atoll. “From this time on, the Barracks became a central base and staging point for Fleet Marine Force Base defense units destined for duty on the outer (Pacific) islands” (Marine Barracks Hawaii n.d.-a). Other occupants of



Marine Corps Reservation portion of the Navy Yard, Pearl Harbor, showing condition on January 1, 1944

Source: Robert F. Walden Collection

these new barracks buildings included Marine companies assigned to security and other duties at Pearl Harbor. The appearance of the Marine Barracks at the beginning of 1944 is shown in the map above.

Other buildings were added to the Marine Barracks complex during WWII, including five one-story steel-framed warehouse buildings, four of which remain. Most of the extant WWII buildings are reinforced concrete construction, often erected in response to or in preparation for an attack. Many of the WWII buildings in the Marine Barracks complex have been demolished. During WWII, three replacement NCO houses were built, but two of those were demolished by 1952 and the other before 1978.

Post-WWII construction at Marine Barracks Pearl Harbor has been limited. At least six of the facilities built in the second half of the 20th century did not last until this century. Early 1950s facilities that remain in the complex are the commemorative flagpole (Facility 1024), carports for the Officers’



Marine Barracks neighborhood viewed from south, c. 1920

Source: Shura, Bishop Museum Archives, CP 121, 660

Quarters (Facilities 791–794), and Married Officer’s Quarters (Facility 1168). More recent construction at the Marine Barracks includes: Public Toilets (Facility 1282) at the recreational fields, new NCO Quarters (Facility 1304), and a new Bachelor Enlisted Quarters (Facility 1633). The latter was the last building erected for the Marines (in 1984) before they moved out of the complex about 1996. The Marine Barracks buildings are now used by a variety of Navy tenants.

Major Landscape Features of Neighborhood

The Marine Barracks neighborhood consists of five Officers’ Quarters in four buildings on a linear layout along Russell Avenue. This small neighborhood is hidden behind tall screening hedges at the front edge and has large canopy monkeypods and banyans along the rear and interior of the site.

The front edge of this neighborhood, providing primary public access, is lined with a panax

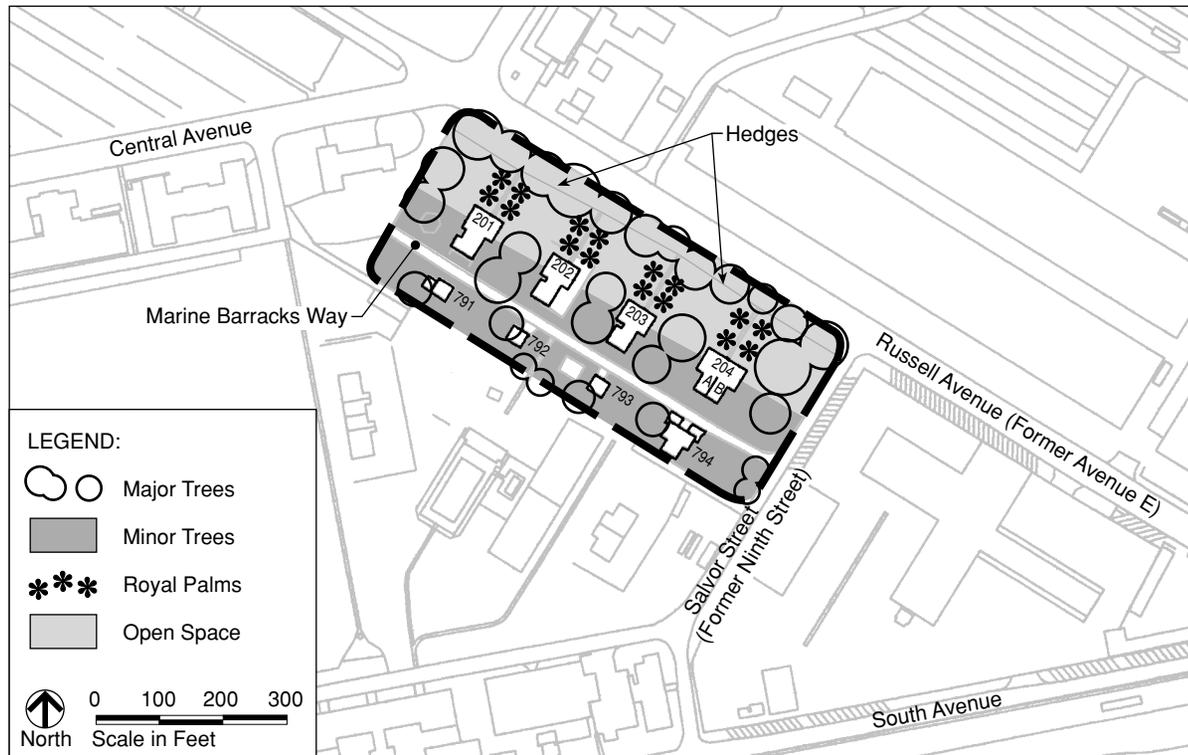


View of Russell Avenue at the Marine Barracks neighborhood
Source: Belt Collins

hedge. An informal utilitarian service road is located at the rear, between the houses and the garages. Past the screening panax hedge, the formal entry is further articulated by a double row of royal palms leading up to the quarters’ entry. The dwellings are set back from Russell Avenue, which helps create an open space between the quarters and the hedge. Without this open space, the houses might seem too enclosed by the landscape. The open feeling is enhanced by the lawn which flows across the front of all the houses, without any hedges or other linear plantings separating the yards.

The foundation planting around each of the quarters consists of a tropical plant palette with colorful flowering shrubs and trees. To help visually separate the structures, canopy and other accent trees are incorporated within the site. The rear access road and back yards are informally planted with colorful shrubs.

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Landscape plan

There are no notable views or large open spaces directly adjacent to the neighborhood. This tiny neighborhood is a little oasis in the middle of a heavily urban setting. Before the warehouses and shop buildings were added around these quarters during WWII, there was open space between Marine Barracks and Hale Alii neighborhoods.

Major Trees/Palms:

- Monkeypod
- Banyan
- Royal palm

Other Trees/Palms:

- African tulip
- Plumeria

Marine Barracks Housing Designs

This historic housing area is very small, consisting of only four residential buildings (three single-family houses, and a duplex). The three houses completed in 1913 were originally identical, and the duplex, dating from 1914, shares many features with the first three buildings in the neighborhood. They are all two-story, mostly concrete residences, which distinguishes them from the other historic housing at Pearl Harbor, almost all of which is wood framed and wood sided.

The historic row of houses at the edge of the Marine Barracks Reservation was originally more closely tied to the Hale Alii neighborhood, before WWII construction inserted non-residential buildings between these two neighborhoods. The large amount of open space to the rear of these quarters has been a characteristic of the Marine Reservation since

Facility #	Addresses	Facility or Design Name	Date
201, 202, 203	201, 202, 203 Marine Barracks Way	Marine Corps Officers' Quarters Design	1913
204	204A Marine Barracks Way & 204B Marine Barracks Way	Marine Corps Officers' Duplex	1914

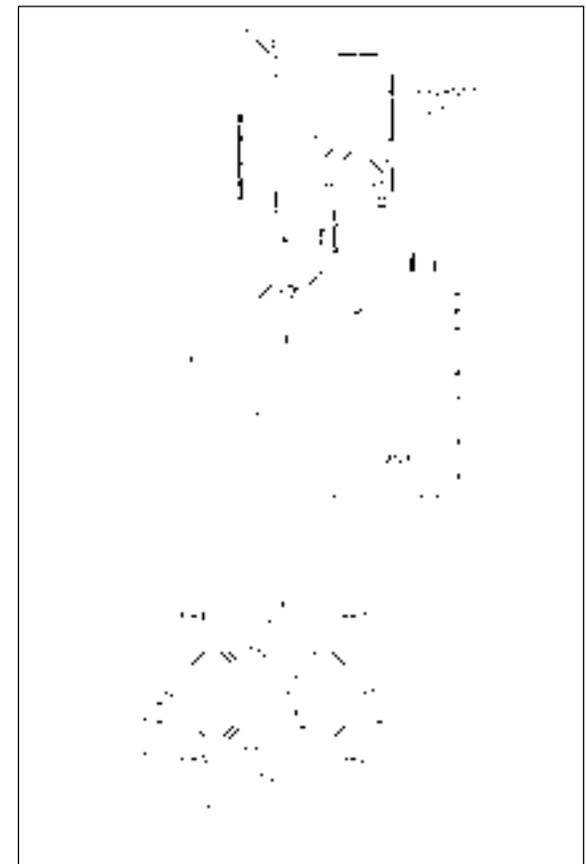
its establishment. Although the four buildings face Russell Avenue (formerly Avenue E), their addresses are on Marine Way, the alley-like road that runs between the rear of the quarters and their garages.

The four residential buildings in this neighborhood include one duplex and three others that share the same basic housing design. These two different designs are analyzed in this report.

Marine Corps Officers' Quarters Design (Facilities 201, 201, & 203)

These three houses were originally identical but Facility 201 now has a slightly larger rear wing than the others. The rear wing of each house was entirely rebuilt around 1950. The appearance of the rear wing on Facility 201 is closer to the original design than in the other two. Even when first built, the wooden rear wing appeared like a later addition to the concrete two-story main portion. However, historic photos and original plans show it was designed from the beginning as the support wing, with kitchen, laundry porch, and servant's quarters.

Designed by Jules H. de Sibour, the style of these houses is difficult to categorize. Italian Renaissance style is perhaps the best term; however, these houses are more austere and blocky than is usual for this style. The Italian influence is acknowledged



Officers' Quarters first floor plan (above) and second floor plan (below)



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*Front view of Facility 203, with carport beyond at rear of house
Source: David Franzen Photography, January 2001*

by de Sibour on his plans, which label the front porch as a “piazza” and the inset space above it (originally open) as a “loggia.” The first term is used in the southeastern United States to mean a veranda (what is called “lanai” in Hawaii).

A few changes were made during the construction process. One major change was the shifting of

the fireplace and chimney location and the creation of a large living room on the east side of each house, rather than a library and a parlor (living room) as shown on de Sibour’s first-floor plan. Historic photos show that almost all the original windows were casements, not the double-hung windows shown in the drawings. There was no side porch in de Sibour’s

drawings, nor in the historic photos dated March 1913. However, in June 1913 and later photos, the side porches on these houses were being built. Perhaps to balance the cost of this extra feature, the rooftop storeroom and stair leading to it, although shown on the drawings, were never constructed. Since there is no easy access to the roof, it is not known if the ventilators shown on de Sibour’s roof plan were built or are extant.

CHARACTER-DEFINING FEATURES OF OFFICERS’ QUARTERS DESIGN

Exterior Features:

- Two-story, T-plan structure with a single-story rear wing.
- Concrete pier foundation with perimeter foundation wall at main block.
- Original wire vent screens to crawl space of main block (not including side porch screens).
- Stuccoed reinforced-concrete walls on main block, with watertable and string courses (at second-floor window sill level and above those windows).
- Drop siding on rear wing.
- Hip roof on rear wing (Facility 201 only).
- Low-slope roof with wide overhanging eaves and concrete parapet on main block.
- Stepped concrete chimney on east side wall.
- Concrete balustrade at upper-floor loggia.
- Main entrance located at center front.
- Six-light over two-panel main entry door with transoms and side-lights.



Entry from front lanai to stair hall, Facility 203
Source: Mason Architects, Inc.

- Paired multi-light (mostly eight-light) casement windows in main block.
- Paired 12-light casement window in upper stair hall (Facilities 202 and 203).
- Pairs or triplets of 10-, 15-, or 18-light sliding windows enclosing loggia and porches of main block.

- Concrete lug sills at first-floor windows.
- Evenly spaced ventilation openings under eaves.
- Visor roof over entry with large solid molded brackets and beams, all concrete.
- Concrete entry stair with low-slung cheekwalls.
- Wood stair with wood railings to rear entries.
- Three-bay side porch with square Doric-style wood posts, plain entablature, and square post and rail balustrade.
- Slightly different square post and rail balustrade in simple rectangular opening of front porch.

Interior features:

- Picture moldings in most rooms of main block.
- Complex 10-inch-high baseboards in living and dining rooms.
- Two-piece 8-inch-high baseboards in upper floor of main block.
- Molded door and window casings.
- Pilasters in dining and living rooms.
- Shallow beams on ceiling of dining and living rooms.
- Deeper beams on ceiling of side lanai.
- Half-turn stair extended and rounded bottom step.
- Molded handrail and slightly chamfered newel post with pyramidal top.
- Stair balustrade: alternating pattern of wide boards with cutouts of U.S. Marine Corps symbol, with triplet of narrow balusters between.



Example of stair balustrade with cutouts of U.S. Marine Corps symbol
Source: Mason Architects, Inc.

- Wood fireplace mantel with brick surround and tile hearth.
- Horizontal split (Dutch) door between entry lanai and stair hall, with six lights over two panels plus transom and sidelights.
- Twelve-light French doors with brass (Facility 201) cremone bolts and four-light transoms from dining room to front and side lanai.
- Other interior doors: five-panel wood doors, many with original bronze hardware.
- Bedroom doors with transom of textured glass.
- Beveled mirrors on closet doors in bathroom passages.
- Original storage cabinets with drawers in upper hall.
- Period-appropriate light fixtures in bedrooms.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Aluminum awnings over rear entries.
- Wood-slat awnings over most windows.
- Window A/C units.
- Expanded metal lath infill screens between piers of side porch and rear wing.
- Overpainting of woodwork.
- Jalousie windows in bathrooms.
- Glass block window at stairwell (Facility 201).
- Exposed conduits at rear of upper story (Facility 201).
- New flooring in entry and side lanai (ceramic tile in Facility 201 and sheet vinyl in Facilities 202 and 203).
- Overlaid engineered-wood flooring in other rooms (in Facility 203 and perhaps other two houses).
- Wall-to-wall carpeting at living room (Facility 201).
- Totally carpeted stair (Facility 203).
- Bathrooms and kitchen wing completely remodeled in all three houses.
- Windows and door removed between upper hall and loggia.

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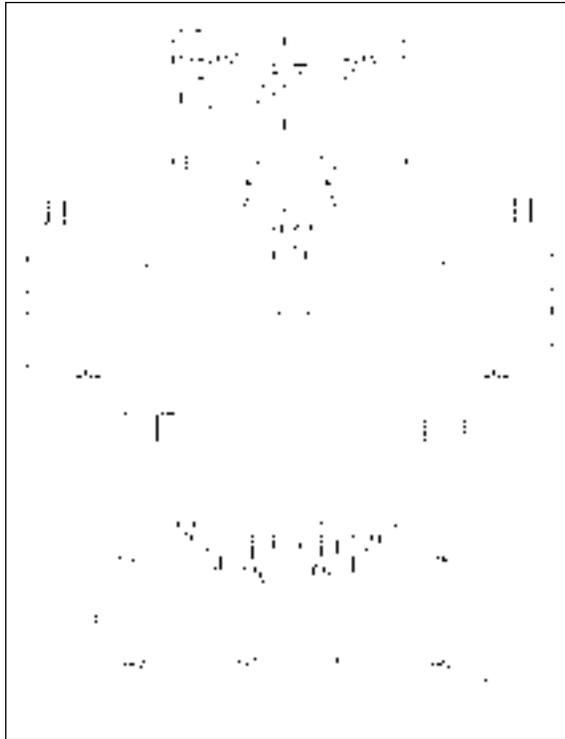


Facility 204, view of side and front
Source: David Franzen Photography, January 2001

Marine Corps Officers' Duplex (Facility 204)

The drawings for this duplex were produced by the Navy Bureau of Yards & Docks, obviously influenced by Jules H. de Sibour's plans for the three adjacent single-family Marine Corps Officers' Quarters. Some elements shown in the original drawings do not appear to have been constructed, such as the

fireplaces and chimney. The asbestos shingles shown on the drawings may have been specified because of the chimney. However, a construction report on the building states that cedar roof shingles were used. Historic photos show that almost all the original windows were casements, not the double-hung windows



Facility 204, Officers' Duplex, first floor plan (above) and second floor plan (below)

shown in the Bureau's drawings. Most of the original windows remain. This building was erected by the Lord-Young Engineering Company in 1914, a year after the other three houses for Marine Officers.

The duplex has more elements of the Craftsman style and less of the Italian Renaissance style than the adjacent architect-designed houses. One main difference, immediately obvious, is the hip roof and dormers on the duplex, while the other three quarters have flat roofs with parapets. Another difference is the

symmetry of the duplex front facade, while the other quarters have a porch on one side only.

There are many similarities between the four residential buildings in this neighborhood, as a comparison of the lists of character-defining features shows. As with the three single-family houses, the rear wing of the duplex was entirely rebuilt around 1950.

CHARACTER-DEFINING FEATURES OF FACILITY 204

Exterior Features:

- Symmetrical two-story duplex, T-shaped plan with single-story rear kitchen and laundry wing.
- Concrete pier foundation.
- Stuccoed reinforced-concrete walls on main block, with watertable plus sill course at second-floor windows.
- Drop siding on rear wing.
- Hip roof on main block, with hip ventilation dormers on all elevations.
- Wood louvers in most of the dormers.
- Shed roofs on side porches and over main entries.
- Ornate wood brackets and exposed rafter ends on entry roofs.
- Plumb-cut rafters with fascia boards on other roof sections.
- Wide eaves with tongue-and-groove sheathing.
- Main entries located at either end of front facade.



Living room and stair of Facility 204, Unit B, Marine Officers' Duplex

Source: Mason Architects, Inc.

- Each main entry with a six-light over two-panel door, with transom set in segmental arch, and sidelights.
- Triplet of paired seven-light casement windows in living and dining rooms, with lug sills.
- Paired six-light casement windows in bedrooms.
- Hopper window at stair landings to attic.



Bedroom door with textured glass transoms in duplex
Source: Mason Architects, Inc.

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- Three-bay projecting porches at each side (originally with screened segmental arched openings, now enclosed with triplets of eight-light sliding windows, except rear arch has four-light over one-panel door with side-lights).
- One remaining original balustrade section in side porch of Unit 204B.

- Brackets of entrance roofs supported on concrete imposts.
- Wide concrete stair with concrete cheekwalls at each main entry.
- Narrower wood stair with wood railing at each rear entry.

Interior features:

- Douglas fir floor and stair treads at main block of house.
- Plaster interior walls on second floor.
- Picture molding in most rooms of main block.
- Baseboards about 10-inch-high, including elaborate base molding and quarter-round shoe molding.
- Molded door and window casings, more elaborate on first floor.
- Shallow beams on ceilings of dining room, living room, and entry lanai.
- Half-turn staircase with extended and rounded bottom step.
- Molded handrail and balustrade on lower steps.
- Tapering newel post with pyramidal cap, set at angle on bottom step.
- Stair to attic with winder steps at bottom and solid railing.
- Most interior doors five-panel type.
- Doors between bedrooms and hall with transoms of textured glass.

- Bronze hardware on some doors and most windows.
- Beveled-mirror doors on bedroom closets.
- Linen storage cabinet in upper hall closet.
- Glass-front cabinets in pantry.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Aluminum awnings over rear entries.
- Wood-slat awnings over second-floor windows.
- First-floor window screens with stiffener at mid-height, not aligned with window muntins.
- Exposed electric conduits at interior.
- All but one section of balustrade on side porches replaced or covered by panels.
- Segmental arches of side porch openings filled in when windows replaced original screening.
- Metal infill screens at crawl space openings (originally wood lattice).
- Window A/C units.
- Kitchen and laundry wing.
- Vinyl tile flooring in remodeled wing, as well as in bathrooms, side porches, and entries.
- Over painting of wood work.
- Jalousie windows.
- Metal ladders and gutters attached to rear walls.

Hospital Point Neighborhood Significance

The Hospital Point neighborhood was built in association with development of the Naval Hospital at Pearl Harbor and the adjacent Radio Station, the Navy's first radio installation in Pearl Harbor. Though this housing area is relatively small, an interesting variety of housing styles is represented. These various styles reflect the sporadic development of this area over a 30-year period. Despite the use of different styles common to each building's particular period, there is a feeling of a unified neighborhood through the use of common materials and similar details.

The Hospital Point quarters are excellent examples of early 20th-century Craftsman-style architecture. Three residences were originally almost identical to the architecturally elaborate Hale Alii Commandant's Quarters and Officers' Quarters two-story design. The other houses at Hospital Point have simpler architecture but still evidence much craftsmanship in their construction.

Neighborhood History

The area now known as Hospital Point was part of the original 1902 land acquisition at Pearl Harbor for the Naval installation. Maps dated 1920 and earlier show that the area was originally designated as "Hospital Reservation." The Radio Station area abutted it, but after the radio transmitter function was relocated in the mid-1930s, the two remaining houses of Radio Station were incorporated into the Hospital Point neighborhood.



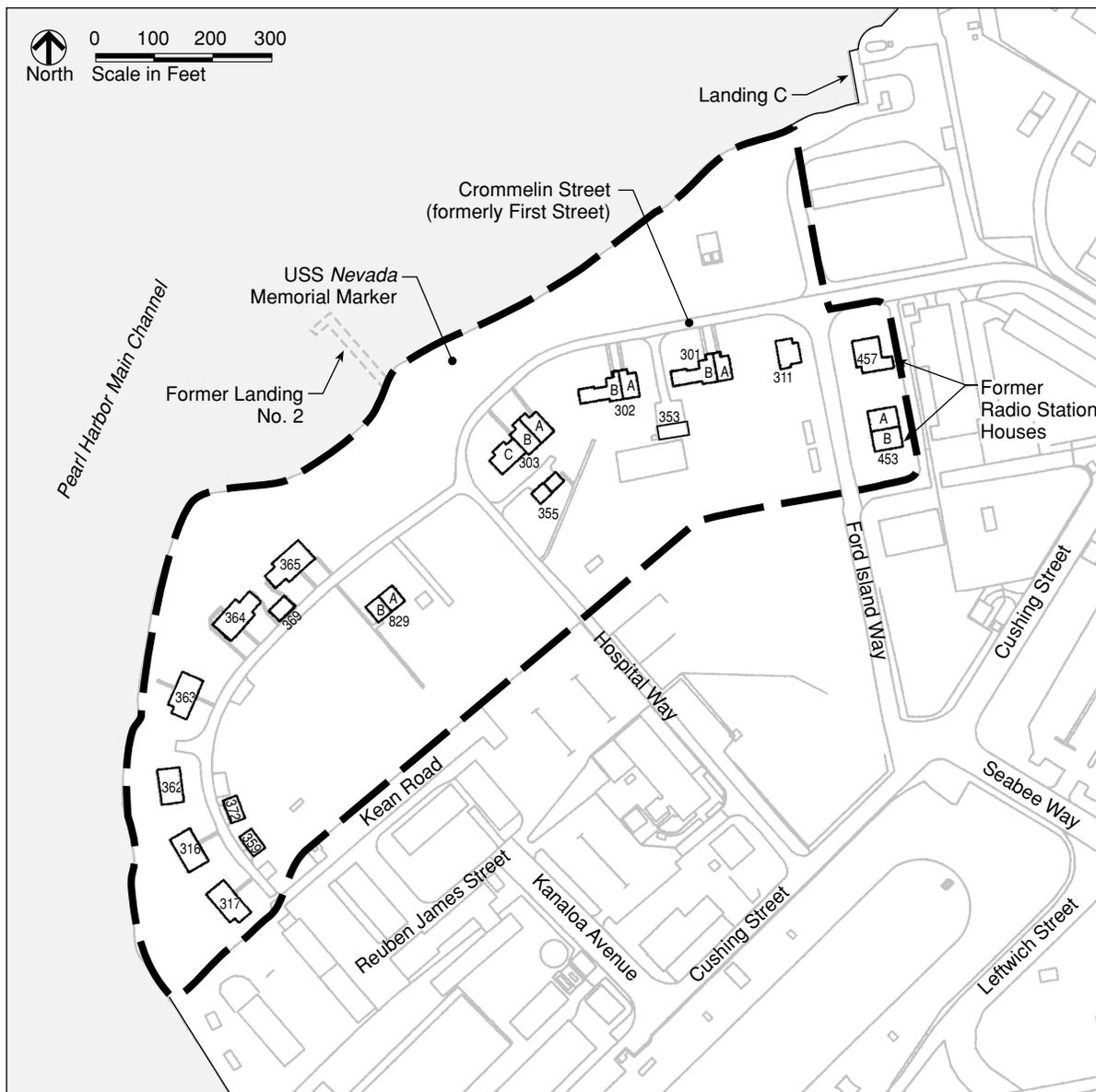
View down Crommelin Street (formerly First Street)
Source: Mason Architects, Inc.

The original street layout within this corner of the naval installation tied the Hospital Reservation and Radio Station areas together. The three roads of Hospital Way, Ford Island Way, and a shoreline road created a triangular pattern, with Ford Island Way and Hospital Way branching out from Central Avenue. The shoreline road (named or renamed First Street by the 1940s and recently renamed

Crommelin Street) was extended in the 1920s to wrap around the point and, in the late 1930s or early 1940s, extended in the other direction to curve back towards the Shipyard.

The first buildings erected at Hospital Point were a ward building, an operating building, a nurses' quarters, and two houses for the surgeons. These five buildings were completed by Spalding

HISTORIC CONTEXT STUDY
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Hospital Point neighborhood

Construction Co. of Portland, Oregon, in 1915, and only the two Surgeons' Quarters (Facilities 301 and 302) remain. The hospital was commissioned and the first patient was received on July 23, 1917. Early reports of progress on the hospital note that by this date there had been substantial plantings of hedges and flowering trees (Marine Barracks Hawaii n.d. (b): 24). In addition, in 1917, a garage was erected, shared by the two Surgeon's Quarters.

Most of the Radio Station facilities at Hospital Point were erected between 1916 and 1919. This Navy communications station at Pearl Harbor was activated in September 1916, replacing the 1906 radio station at the Naval Station in Honolulu. Radio was first installed in ships and at shore stations in 1903, in response to the need for improved communications that the Spanish-American War demonstrated (Alden 1972: 234). The Radio Station



Naval Hospital, Pearl Harbor, September 1, 1921, looking Northwest from Radio Tower No. 1. The two Radio Station houses in the right foreground are not extant, but all others remain.

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph 3716

at Pearl Harbor was much more powerful than the one in Honolulu, which could only transmit signals 225 miles and receive them from a distance of 140 miles. The Pearl Harbor radio signal could reach as far as the Philippines. The first three buildings, seen on a 1917 map of Radio Station, were the Operations Building, Power House, and Operator's Quarters (Facility 453). The Quarters for the Officer in Charge (Facility 457) was built in 1918. By the end of 1919 there were eight more buildings at the Radio Station, all of which have since been removed. Only the two earliest Radio Station quarters remain, and they have been easily incorporated into the Hospital Point neighborhood, due to their proximity to the Naval Hospital quarters. Only a few small buildings and additions to the powerhouse were built at the Radio Station during the 1920s and early 1930s. In 1931, land was purchased in Lualualei Valley for construction of a transmitter station, which was activated in 1936. The radio towers at Pearl Harbor were dismantled in 1937.

In contrast to the Radio Station, substantial additional construction was undertaken in the Hospital complex during the 1920s. In 1921, the administration building, subsistence building, boiler house, and an additional ward (Facility 324) were completed. The first three of these buildings do not remain, but they set up a pattern of building layouts that influenced some of the road alignments and future building locations. With the World War II construction of Drydock #4 and other facilities, and with the c. 1960 demolition of most of the 1915 and 1921 buildings, only portions of the original street and building patterns remain.



Aerial view of Naval Hospital, October 1930
 Source: National Archives II, RG80 CF Box 151, PH 16091

The Commanding Officer's Quarters (Facility 303) was also built in 1921, along with a servant's quarters that was connected to it and four Civilian Employees' Quarters. Only one of the latter remains (Facility 311). These two 1921 residences (Facilities 303 and 311) are now clustered, with the two 1915 houses (Facilities 301 and 302), on Crommelin Street (formerly First Street) between Ford Island

Way and Hospital Way. The Civilian Employees' Quarters, however, were originally on a diagonal street, southeast of the hospital ward buildings, along with three Pharmacists' Mates Quarters, erected in 1925. Facility 311 was relocated to its present site about 1943. The six other houses on the diagonal street had been moved or demolished before 1943.

Two other quarters were built in 1925, located at the far west side of the Hospital Point complex, removed from the other residential groupings. The road to these Pharmacist's Quarters (Facilities 316 and 317), originally ran between these two houses and the shoreline, then made a right-angle turn towards the other houses. A 1926 photo of the area indicates that the street layout was soon changed to a curve like a quarter circle, with the pavement running between the houses and the hospital buildings. Since the layout of the main part of the houses was symmetrical, this change of back door to front door did not pose any problems. Maps dated 1929 and 1932 show that the portion of the road along the shoreline was retained, until dredging and/or erosion moved the shoreline so close to the houses that, by 1944, there was no longer room for a road on this side. The garage (Facility 359) for the first two Pharmacist's Quarters was built in late 1925, probably when the new road was constructed.

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Pharmacist's Quarters, Facilities 316 and 317 (one-story waterfront quarters design), looking towards water, September 1925

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph 5509



Pharmacist's Quarters, Facility 316 or 317 (one-story waterfront quarters design), living room, November 1925

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph 5546

Two more Pharmacist's Quarters (Facilities 362 and 363) were built in 1929 flanking the 1925 quarters. Facility 363 was originally aligned with the 1925 two-story concrete warehouse (Facility 327) on the east side of Facility 317. There was originally a gap between the four Pharmacist's Quarters and two Junior Officer's Quarters (Facilities 364 and 365). This gap was filled in when Facility 363 was moved before 1944. The houses for the Junior Officers and one more garage (Facility 369) also date from 1929. In 1930, a third garage (Facility 372) was added for two of the Pharmacist's houses to share.

Many of the hospital-related buildings erected in the 1920s, other than houses and garages, have been demolished. By the late 1920s, there were already plans for an additional Naval hospital site on Oahu. A letter from the District Medical Officer in 1928 (Carpenter) discusses a 2,000-bed hospital

“using hutment construction” on a 25-acre site in Moanalua Park. The hospital at Pearl Harbor at that time had 680 beds. The site at Hospital Point was apparently considered too vulnerable to direct enemy fire.

In the 1930s, a few additional buildings were erected at Hospital Point. Two of these, the hospital corpsmen's quarters (Facility 371) and the boiler house (Facility 326) were built in more than one stage. The hospital laundry (Facility 370) was built in 1938 as one of the Works Progress Administration projects on the installation.

Historic photographs and maps show that between October 1937 and January 1941, one E-plan and four H-plan ward buildings were constructed. The Navy apparently anticipated a need to expand hospital facilities as war clouds gathered in Europe and Japan invaded China in the late 1930s. These temporary ward buildings were demolished by 1951.

In 1939, plans for a new naval hospital in Aiea were announced, with the suggestion that the existing hospital buildings might be utilized as quarters for additional marine troops (Honolulu Star Bulletin Jan. 7, 1939: 1). There were also suggestions, in 1941, to use both the Aiea and Pearl Harbor locations as hospitals, along with feasibility studies for use of plantation hospitals and the Immigration Station building for convalescent patients (Commandant, Fourteenth Naval District 1941). By 1941, there were also plans to build Drydock #4 and a bombproof power plant within the existing hospital area. The footprint and operating area required for the drydock required the demolition

of the nurses' quarters, two wooden garages, and a stable building.

Construction of the new hospital on Aiea ridge started in July 1941, with the complex at Hospital Point intended to remain in operation until the opening of the new facilities. The number of beds planned for the new hospital kept expanding. Although the new hospital was commissioned in November 1942, construction continued at Aiea Heights until April 1944 (U.S. Navy, Bureau of Yards and Docks 1947, Vol. II: 148).



Surgeon's Quarters, April 1917
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph A-38

Besides the new hospital at Aiea Heights, more hospital facilities were constructed at two additional locations near Pearl Harbor. These temporary hospitals at Moanalua Ridge and at McGrew Point, built by Navy Construction Battalions (CBs or Seabees), were needed to accommodate the projected casualty load from Pacific battles, especially if the invasion of Japan was to occur. Most of the buildings at these two temporary hospitals were Quonset

huts, with a few wood-framed buildings. The hospital at Hospital Point continued in use throughout the war, although use was curtailed due to the pressing needs of the Shipyard, which was having difficulty retaining workers who could not bring their families to Hawaii due to the housing shortage (Furlong 1942) (Fourteenth Naval District [1945]: 320 & 329). The Shipyard wanted to use the hospital ward buildings for bachelor officer and enlisted housing to free up the houses in Naval Housing Area I (later called Hale Moku) for civilian family housing. The hospital Commanding Officer during the war saw advantages to keeping both the 900-bed hospital at Hospital Point, and the less-vulnerable site in Aiea (McMullin 1942). Many of the Hospital Point buildings were converted to Bachelor Officers' Quarters by 1944. "The need for housing was so acute that the hospital setup was constantly watched and frequent investigations were made of the amount of facilities in proportion to the need" (Fourteenth Naval District [1945]: 331).

Both the Aiea Heights and the Hospital Point facilities treated casualties of the December 7, 1941, attack. At Aiea, men were treated in buildings that were only partly roofed, using beds and equipment that was rapidly uncrated to meet the needs of this unscheduled opening; about 110 wounded were treated (Trumbull 1942: 1). Hospital Point was much closer to the attack and better prepared to deal with the injured and dead. Basements of the laboratory (Facility 367) and the not-yet-demolished nurses' quarters were used as temporary morgues for the 313 dead brought to this hospital. Hundreds of battle casualties were admitted as patients and

thousands were treated for minor injuries and released (Hayden 1941). One of the Japanese planes that was shot down crashed between the laboratory building (Facility 367) and a Chief Petty Officer's quarters, setting fire to the latter. The Japanese aviators' bodies were placed in the hospital's morgue.



Rear of Surgeon's Quarters, November 1914
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph 575

The USS *Nevada* was the only battleship to get underway during the Pearl Harbor attack on December 7, 1941, attack, although already hit by a bomb and torpedo at its mooring off Ford Island. As it steamed towards the channel and the open sea, Japanese planes attacked it with more bombs, machine gun strafing, and torpedoes. Because its navigational equipment was damaged, it would not be able to make the turns in the channel to take it out to sea. To avoid than blocking the channel, the *Nevada* beached near Landing C, close to the Hospital Point residences, and many of her casualties

were put ashore. With the battleship sinking and to prevent it from blocking the entrance channel, action was taken to push the *Nevada* across the channel and beach it on Waipio Peninsula (Ditzel 1994: 83).

After WWII, the Hospital Point neighborhood no longer had a medical connection; all Naval Hospital activity was consolidated at the Aiea Heights



Pharmacist's Mates Quarters (not extant), looking north, November 1925

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph 5549

hospital in the late 1940s. That location was shut down in 1949, with the opening of the Tripler Medical Center. The temporary ward buildings at Pearl Harbor were demolished by 1951. The removal of these buildings allowed more open space near the houses, restoring the original landscape character in the Hospital Point residential neighborhood. Between 1966 and 1977, some non-residential Hospital Point facilities were demolished, such as the operating building, one of the wards, and the administration building.

Post-WWII construction in the Hospital Point neighborhood has been very limited. One building, built as a chapel in 1944, was relocated to the Hospital Point neighborhood in 1947 and converted to duplex quarters (Facility 829). A historical marker about the USS *Nevada* and the December 7, 1941, events related to this ship was erected at Hospital Point in 1983, near the location where it first beached. This is a compatible feature in the historic neighborhood but not a contributing historic facility.

Two 2-car garages were built around 1999; one is for the residents of units 453A and 453B, and the other for those in Facilities 457 and 311. These were designed to reflect the historic garages in the neighborhood. They are compatible buildings in the historic neighborhood but not contributing historic facilities. These two garages do not have any facility numbers on them, except for the designations of the residences with which they are associated.

Major Landscape Features of Neighborhood

The current housing quarters were adapted from existing hospital staff quarters; therefore, the neighborhood's layout is different from other military neighborhoods of that era. Instead of having separate public and private road design, most of the buildings are on a single road with the garage structures either across the street or toward the rear of the residences. The curvilinear road follows the edge of the shoreline facing Pearl Harbor. This layout allows for unobstructed views of Pearl Harbor.

Distinctive site features include the concrete borders used to delineate the edge between the road-

way pavement and the adjoining lawns, and a red fire alarm box at Hospital Way and Crommelin Street. Located along the shoreline, west of Crommelin Street and north of Hospital Way is the USS *Nevada* Memorial, a concrete memorial with information plaques and associated flagpole with lights, built and dedicated in 1983. The memorial pays tribute to the battleship and its crew for their heroic actions during the attack on Pearl Harbor.

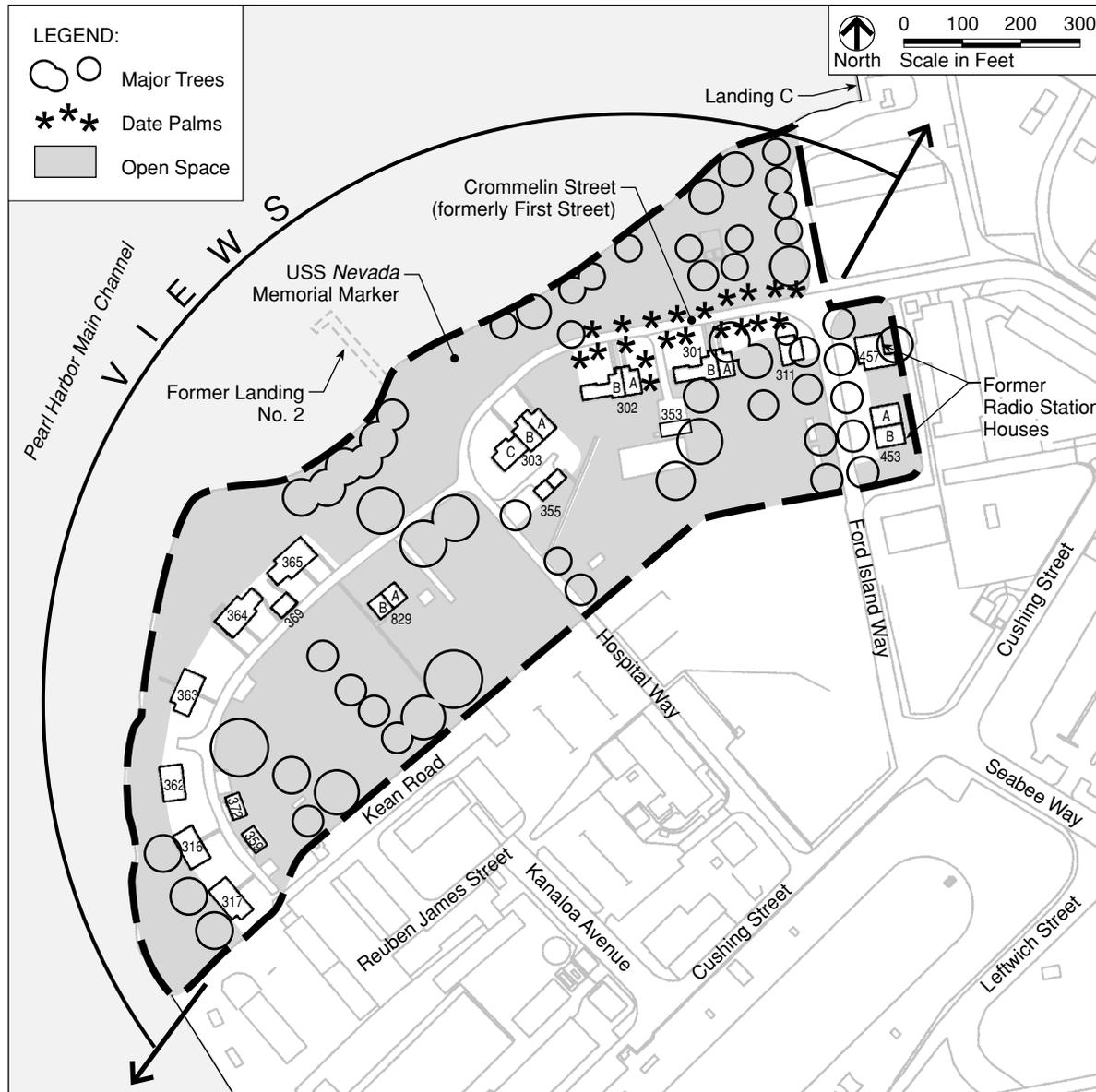


Landscape along Ford Island Way at Hospital Point (former Radio Station boundary)

Source: Belt Collins

The two former Radio Station houses are on Ford Island Way, which is lined with monkeypods on both sides of the road. The existing quarters are set back from the road to create front yard spaces that are informally planted. Because this street is now blocked off by a fence, it is a quiet residential road.

Along Crommelin Street fronting Facilities 301 and 302 are large date palms on both sides of the road. The effect is similar to the royal palms along Hale Alii Drive, but the date palms are not continuously planted along the length of the entire road.



From the intersection of Hospital Way to the end of Crommelin Street, no definite street tree exists. Scattered along the road are a few banyans and monkeypods. Foundation planting around the quarters are sparse. Between the quarters are a few monkeypods and banyans.

This neighborhood has dramatic views across Pearl Harbor, both to the Waianae Mountain Range and up towards Pearl City and the Koolau Mountain Range. Across Crommelin Street, there is a wide band of open space opposite Facilities 311, 301, 302, 303, and 829. Within this area are pink tecoma, *kiawe*, *milo*, and other smaller, less notable trees. The other notable open space area within the neighborhood is southeast of the Crommelin Street quarters. Within this space are a number of banyans, monkeypods, and plumeria trees. A row of mango trees dissects the center of the space.

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Major Trees/Palms

- Monkeypod
- Banyan
- Date palm
- Coconut

Other Trees

- Kiawe
- Mango
- Pink tecoma
- Royal poinciana
- Plumeria
- Milo

Landscape at Hospital Point

Hospital Point Housing Designs

Hospital Point is a fine example of a residential community based around a military hospital. The large amount of open space and the waterfront location greatly enhance this neighborhood. The Hospital Point housing area has 13 residential and five garage buildings that were developed over a period of 30 years. Because of its lengthy development period, various architectural styles having different construction phases are apparent. However, there is an overall cohesion among the wooden houses, although the level of craftsmanship and decoration ranges from ornate to very simple.

The 13 residential buildings in this neighborhood include seven housing designs, of which two are essentially the same as in Hale Alii. Of the remaining five, three designs are analyzed in detail in this report. The following lists of features for those three designs were prepared from field notes and photos taken before the 2000-2002 Wholehouse Revitalization project at Hospital Point, which involves renovation work in all of the units.

Designs Similar to Those in Hale Alii

The two houses built as Surgeon's Quarters and the one for the Naval Hospital's Commanding Officer were originally very similar to quarters in Hale Alii. However, the Hospital Point houses have been divided into duplexes (Facilities 301 & 302) and a triplex (Facility 303) and have lost some of the character-defining features of the Hale Alii houses, especially in the interior.

The Surgeon's Quarters (Facilities 301 & 302) have most of the exterior character-defining features

Facility #	Quarters Designation (if multi-unit)	Addresses	Similar to Facility (Neighborhood)	Facility or Design Name	Date
303	Units 303A, 303B & 303C	6, 7, & 8 Commelin St. (formerly First St.)	Fac. 1000 (Hale Alii)	Commanding Officer's Quarters	1921
301/302	Units 301A & 301B/302A & 302B	2 & 3/4 & 5 Crommelin St. (formerly First St.)	Fac. 1002, 1004, 1036-1039 (Hale Alii)	Surgeon's Quarters Design	1915
453	Units 453A & 453B	2, 3 Ford Island Way		Radio Station Duplex for Chief Operators' Quarters	1917
457		1 Ford Island Way		Quarters for Officer in Charge of Radio Station	1918
316, 317, 362, 363, 364, 365		15, 16, 14, 13, 12, 11 Crommelin St. (formerly First St.)		One-Story Waterfront Quarters Design	1925/1929
311		1 Crommelin St. (formerly First St.)		Civilian Employee's Quarters	1920
829	Units 829A & 829B	9 & 10 Crommelin St. (formerly First St.)		Chapel/Duplex Quarters	1944/1947

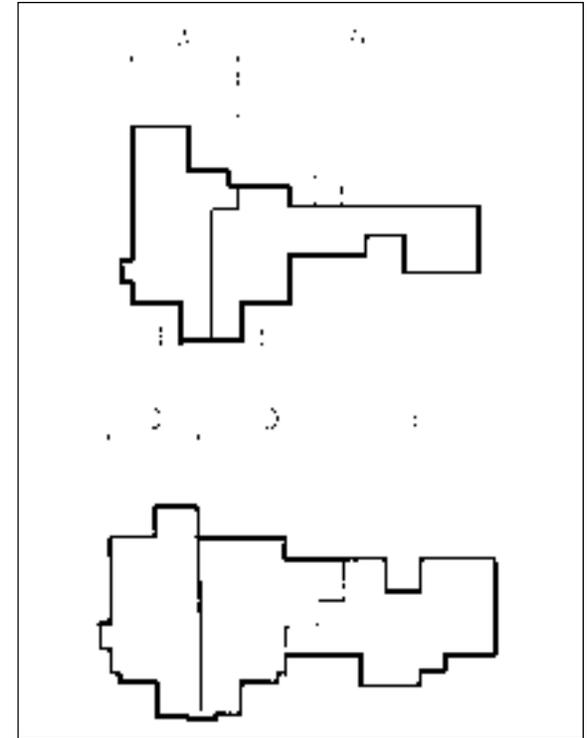
listed under the Officers' Quarters two-story design at Hale Alii. These Hospital Point houses were built in 1915, only a year after the Hale Alii houses and by the same contractor, Spalding Construction. The houses in the two neighborhoods have slightly different original roof features. There are four hipped ventilation dormers on the main roof of the Hospital Point houses, contrasted with the two such dormers on the more complex Hale Alii roofs. In addition, the Surgeon's Quarters have hip roofs over the front porch rather than the shed roof used in the

Hale Alii design. The other main differences are in the doors and windows. For instance, the triple-hung wood-sash windows at the main stairwells of the Hospital Point quarters have 8/8/1 lights, rather than the 12/12/1 pattern at the Hale Alii houses.

There are now many differences between the Surgeon's Quarters and the two-story Hale Alii Officers' Quarters design due to the duplex conversions in 1953. Several of the changes made detract from the historic character of the Surgeon's Quarters. The most evident exterior examples are the removal



Front and side view of Facility 301, Surgeon's Quarters, from Crommelin Street (formerly First Street)
 Source: David Franzen Photography, April 2000



Building types 301 (above) and 303 (below) show how floor plans originally similar to Hale Alii were duplexed or triplexed

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of the lava rock porch, rebuilt as two enclosed wood-frame entry porticos, and the replacement of the original exterior doors. In Units 301A and 302A, the same features that are seen in the living rooms of the Hale Alii quarters remain, such as the lava rock fireplace, pilasters, and box beam coffered ceiling. However, almost all of the other original first-floor rooms and the stairs were heavily altered in

the duplex conversion. Some of the second-floor original elements remain, such as the interior doors and canec-panel ceilings.

The Naval Hospital's Commanding Officer's Quarters (Facility 303) has many of the exterior character-defining features listed under the Commandant's Quarters at Hale Alii. However, this Hospital Point house was built in 1921, seven years

after the similar Hale Alii one. There were several differences between the two original designs, and these differences were increased when the Commanding Officer's Quarters was converted to a triplex in the early 1950s. The design of the Commanding Officer's Quarters was simpler than the Commandant's Quarters in Hale Alii. The former did not have the balconies and ornate brackets that



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Front view of Facility 303, Commanding Officer's Quarters
Source: David Franzen Photography, April 2000

the latter did. It also had a simpler main hip roof and only three hipped ventilation dormers, not four. The original lava rock entry porch has been retained, but enclosed and divided into two entry rooms.

On the interior of the Naval Hospital's Commanding Officer's Quarters, several original features remain in Units 303A and 303B. Unit 303A retains the original lava rock fireplace, pilasters, box

beam coffered ceiling, and one front window seat. Unit 303B has original pilasters, box beam coffered ceiling, one front window seat, and the original main stair. In both of these units, the dining spaces have board and batten walls and ceilings, as these were originally the rear lanai spaces of the house. The upper floor rooms in both units retain the original two-panel wood doors, some with transoms. This

is in contrast to the five-panel doors in the Commandant's Quarters. Unit 303C, in the one-story wing of the original house, has few original features, except for V-centered tongue and groove boards in the dining room and hall.

Radio Station Duplex (Facility 453)

This duplex is built in a simple cottage vernacular style that is compatible with, but less refined than, the Craftsman style seen in other houses in the neighborhood. This duplex was built for the radio station's chief operators, who occupied these units until the radio station was relocated to Lualualei in the 1930s. This 1917 building is the only one of its kind at Pearl Harbor.

CHARACTER-DEFINING FEATURES OF FACILITY 453

Exterior Features:

- Single-story, wood-framed house.
- Lava rock piers with unique insect stops consisting of copper sheets formed into troughs.
- Board-and-batten exterior walls with wood water table.
- Hipped roof structure with an intersecting gable on the front facade, hipped ventilation dormers on the rear, and projecting shed-roofed lanai.
- Rectangular louvered vent in gable.
- Horizontal molding under gable vent, creating tympanum effect.
- Wide eaves (about three feet) with tongue and groove sheathing and exposed rafters, some of which are clipped.

- Fascia board over rafter ends.
- Mostly double-hung windows with 8/8, 6/6, or 6/1 lights.
- Original casement window pair in each unit now used as fixed windows (8-light) on enclosed lanai.
- Wood screens and casings at doors and windows.
- Wide wood stair with simple railing to each front door; narrower rear stair.
- Wood-frame main entry doors with 15 lights.

Interior features:

- Five-panel doors with period hardware.
- Louvered closet doors.
- V-groove tongue-and-groove walls in bathroom (Unit 453A).
- Wood door and window casings.
- Canec ceilings, except in laundry and sleeping lanai rooms.
- Canec wall panels in living and dining rooms.
- Board-and-batten walls in laundry and sleeping lanai rooms.
- Douglas fir floors with wide boards (Unit 453B).
- Chair rail (Unit 453B).

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Expanded metal lath infill screens between piers.
- Asphalt roof shingles (replaced original wood shingles).



*Front view of Facility 453, Radio Station Duplex
Source: David Franzen Photography, April 2000*

- Jalousie windows.
- Door with jalousie section.
- Enclosure of rear lanai and removal of baluster railing.
- Plywood sheathing at portion of rear eaves.
- Window A/C units.
- Flush interior doors.
- Vinyl flooring (throughout Unit 453A).
- Non-original wood picture rail (Unit 453A).
- Overpainting of woodwork.



Radio Station Duplex existing floor plan

Quarters for Officer-in-Charge of Radio Station (Facility 457)

This house is a simple vernacular cottage on the exterior but has many elements of the Craftsman style on the interior. Built in 1918 for the Officer in Charge of the Radio Station, it housed this officer and his family until the radio towers were relocated to Lualualei in the 1930s. In the 1940s, this was the Yard Communications Officer's quarters. The residence was the only one of its kind ever built, since the original drawings were not issued by the Navy's Bureau of Yards & Docks but by the Public Works Office at Pearl Harbor. It has been altered very little over the years.

CHARACTER-DEFINING FEATURES OF FACILITY 457

Exterior Features:

- Single-story, wood-framed house.
- Lava rock piers at foundation perimeter with unique insect stops consisting of copper sheets formed into troughs, which are located at the top of the piers.
- 12-inch-by-12-inch concrete interior piers with wider concrete caps incorporating insect troughs.
- Board-and-batten exterior walls with wood water table.
- Former front lanai that projects outward slightly.
- Complex hip roof with wood-louvered gabled vents and a wing with a lower ridge line.



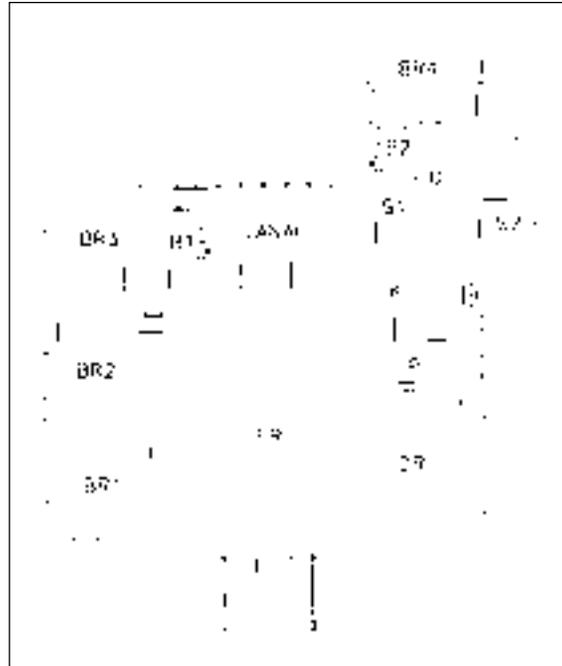
*Front and side view of Facility 457, Quarters for Officer-in-Charge of Radio Station
Source: David Franzen Photography, April 2000*

- Wood steps, landings, and railings at main and side entries, except for the first step of concrete.
- Ten-foot-wide main entry stair and landing.
- Brackets with decorative ends supporting roof overhang at main entry.
- Wide roof eaves with exposed tongue-and-groove sheathing and plumb-cut rafter ends.
- Concrete central chimney (no longer in use).
- Original 6/6 double-hung windows.
- Two-light casement windows enclosing front lanai, compatible but not original.

- Two-light-over-two-panel main entry door and wood screen door, compatible but not original.
- Wide wood door and window casings.

Interior features:

- Historically and architecturally intact interior floor plan, except for removal of wall between original front lanai and living room.
- Paneled living room ceiling, using canec and wide boards.
- Canec ceilings in dining room with mitered corner pattern.
- Canec ceilings throughout except board-and-batten ceilings originally in kitchen and rear wing.
- Interior walls, usually surfaced 1-inch-by-12-inch boards with 2-inch-wide “dressed” battens.



Quarters for Officer-in-Charge of Radio Station floor plan

- Dining room dressed battens: nailed over the canec panels, spaced about two feet on center.
- Most interior doors: Craftsman-style, with one horizontal panel over three vertical panels.
- Paired six-light doors between living room and rear lanai.
- Wood interior moldings, including 10-inch high baseboards.
- Beveled-glass mirror in master bedroom closet door.
- Cabinets in pantry.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Asphalt composition roof shingles (originally wood).
- Enclosed front lanai.
- Window A/C units.
- Jalousie windows in kitchen lanai.
- Electrical and plumbing fixtures from later renovation.
- Over painting of woodwork.
- New hardware on doors.
- Vinyl-tile flooring throughout (originally wood).
- Expanded metal lath infill screens between piers.
- Paired eight-light wood casement window, set between (and lower than) two 6/6 double-hung windows.
- Exterior window awnings of wood lath.

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Facility 457, view of living room from front entry
 Source: David Franzen Photography, April 2000

- Paneled walls in living room, dining room, and bedrooms, but with differing patterns.
- Canec panels in the living room fitted between 2-inch-by-6-inch dressed studs, spaced about three feet apart with a 7/8-inch board encircling room at the 6- to 8-foot height of the door openings.
- Slightly pedimented boards over the doorway openings between the living room and the other rooms.
- Dining room encircling board: thinner and higher than in the living room, 5/16-inch-thick and about 8 feet high.

One-Story Waterfront Quarters Design (Facilities 316, 317, 362, 363, 364 & 365)

These six single-story houses along the waterfront at Hospital Point were built in 1925 (Facilities 316 and 317) or 1929 (Facilities 362 through 365). The design is a simplified Craftsman style, compared to the more elaborate two-story houses at Hospital Point. Military housing design is rank conscious, and the cost of this design lies between the most inexpensive vernacular houses the Navy built and the expensive Officers' Quarters at Hale

Alii and Hospital Point. The main difference between the 1925 and the 1929 houses is the use of a concrete floor system, rather than wood, in the 1929 buildings. There are some variations in floor plans: the Pharmacist's Quarters type (Facilities 316, 317, 362 and 363) has two bedrooms while the Junior Officers' type (Facilities 364 and 365) has three bedrooms. Moreover, the latter two houses are mirror images of each other in floor plan. Otherwise, the design of these six houses, by the U.S. Navy Bureau of Yards and Docks, is very similar.



Pharmacist's Quarters type, interior of living room looking towards back lanai

Source: David Franzen Photography, April 2000



Front view of Facility 316, Pharmacist's Quarters

Source: David Franzen Photography, April 2000

In all of the houses the wall between the original inland (street-side, originally considered the rear side) lanai and the living room has been removed and the lanai enclosed. The date of enclosure is not known, but this alteration was done sensitively and is not considered a detracting element. Brick chimneys with concrete caps remain. Although these are no longer connected to the kitchen stoves, they add character to the houses. Other than these alterations, the six houses have very high integrity with few variances from the original plans. There are slight variations between each of these quarters because of different renovation and repair projects done over the decades since construction. Not all of the listed character-defining features or character-detracting elements are seen in each house.

CHARACTER-DEFINING FEATURES OF WATERFRONT QUARTERS DESIGN

Exterior Features:

- Single-story, wood-framed single-family house.
- Complex hip roof (longer wing on Facilities 364 and 365) and hipped ventilation dormer over bedroom wing.
- Painted metal along roof ridge of Facilities 362–365 (may be copper).
- Slight projections at center of front and rear walls.
- Concrete pier foundation.
- Board-and-batten siding with wood watertable.
- Exposed rafters with clipped ends.
- Tongue-and-groove eaves sheathing.
- Brick chimney with concrete cap.
- Multi-light paired casement windows, usually under four-light transoms.
- No transoms on kitchen, servant’s bathroom, and pantry windows of Pharmacist’s Quarters type.
- Double doors at main entry, with six lights over two panels, under five-light transoms.
- Wood screen doors.
- Screened rear and side lanai, some with wood balusters.
- Wood railings and usually concrete stairs (except wood stairs on 1925 houses).



Facility 363 lanai off kitchen
 Source: David Franzen Photography, April 2000

Interior features:

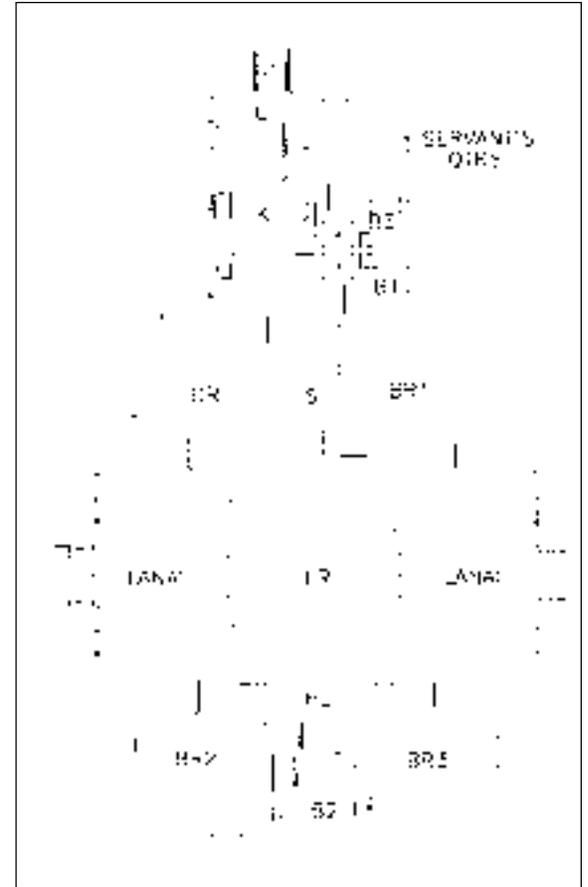
- Plaster walls and ceilings, except board-and-batten walls and canec or tongue-and-groove ceilings in lanai.
- Picture molding in living rooms, dining rooms, and bedrooms.
- Approximately 8-inch-high base boards.
- Wood flooring in living rooms, dining rooms, bedrooms, and halls (originally).
- Some remaining interior wood window screens.
- Some period door and window hardware extant.
- Interior doors mostly five-panel type.
- A few interior doors with three-light transoms.
- In Pharmacist’s Quarters type, swinging five-panel door between kitchen and living room.



Waterfront Quarters Design, Pharmacist’s Quarters floor plan
 (Facilities 316, 317, 362, and 363)

- In Pharmacist’s Quarters type, doors to main bathroom and between kitchen and pantry with six opaque lights over two panels.
- Marble shower enclosures with period soap dishes and medicine cabinets (Facilities 364 and 365).
- Double doors and transoms matching entry doors, between living room and lanai on water side.

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



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Rear view of Facility 365, Junior Officers' Quarters
Source: David Franzen Photography, April 2000

Waterfront Quarters Design, Jr. Officer's Quarters floor plan
(Facility 364, plan for Facility 365 is mirror image)

- Paired eight-light casement windows and four-light hopper transoms, flanking door, on the same wall between living room and lanai on water side.
- Wide wood door and window casings.
- Glass front cabinets with flat muntin grids at butler's pantry.
- Paired six-light windows with hopper transom between the pantry and utility/service lanai.
- Historically and architecturally intact floor plans.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Composition shingles.
- Expanded metal lath infill screens between piers (originally wood lattice).
- Some altered windows.
- Window A/C units.
- Some plywood infill panels at lanai.
- Metal exterior stair railing (Facility 362).
- Vinyl tile flooring (typically in kitchen, baths, and rear and side lanai, but throughout a few houses).
- Flush doors and contemporary hardware.
- Non-historic plumbing and electrical fixtures.
- Storage shed additions.
- Overpainting of interior woodwork.



*Front and side view of Facility 311, Civilian Employees' Quarters
Source: David Franzen Photography, April 2000*

Other Unique Quarters at Hospital Point (Facility 311 & Facility 829)

Facility 311 and Facility 829 are both relocated buildings. Due to budget limitations of this project, these residences have not been analyzed in detail. They are considered contributing buildings to the Hospital Point historic housing area.

As the only remaining example of Civilian Employee Quarters at the Naval Base Pearl Harbor, Facility 311 is significant historically. Its architectural importance is diminished due to the extensive alterations it has undergone over the decades. The house was designed in 1919 by the U.S. Navy

Bureau of Yards & Docks for single employees, who were expected to dine in another building, since the original floor plan shows only four bedrooms, a living room, a bathroom, and a storeroom. It was re-drawn by the Pearl Harbor Public Works office as a single-family house, probably before construction was finished, and was completed in 1921. In 1949, Facility 311 was enlarged and its interior layout changed. Other changes in the floor plan have occurred since then. The building has a plantation-style architectural character, but one which evidences its many renovations, as was typical in plantation houses.

Facility 829 is the only building in the neighborhood that was not originally residential in design and use. It was originally built as a chapel, near the Destroyer Escort wharfs along the Pearl Harbor entrance channel, and was moved to this site about 1947, when it was converted to a duplex. After WWII there was more of a demand for family housing than there was need for a chapel. The circa 1947 renovation involved raising the whole building about two feet to allow expansion of the balcony to become a second floor. Interior walls were built, and windows were changed. The building's architectural style could be called minimal traditional. The design has features that are similar to other residential buildings in the neighborhood, including hip roofs, casement windows, and a large screened lanai. This duplex is compatible in architectural character with the neighborhood and its history of use is significant.

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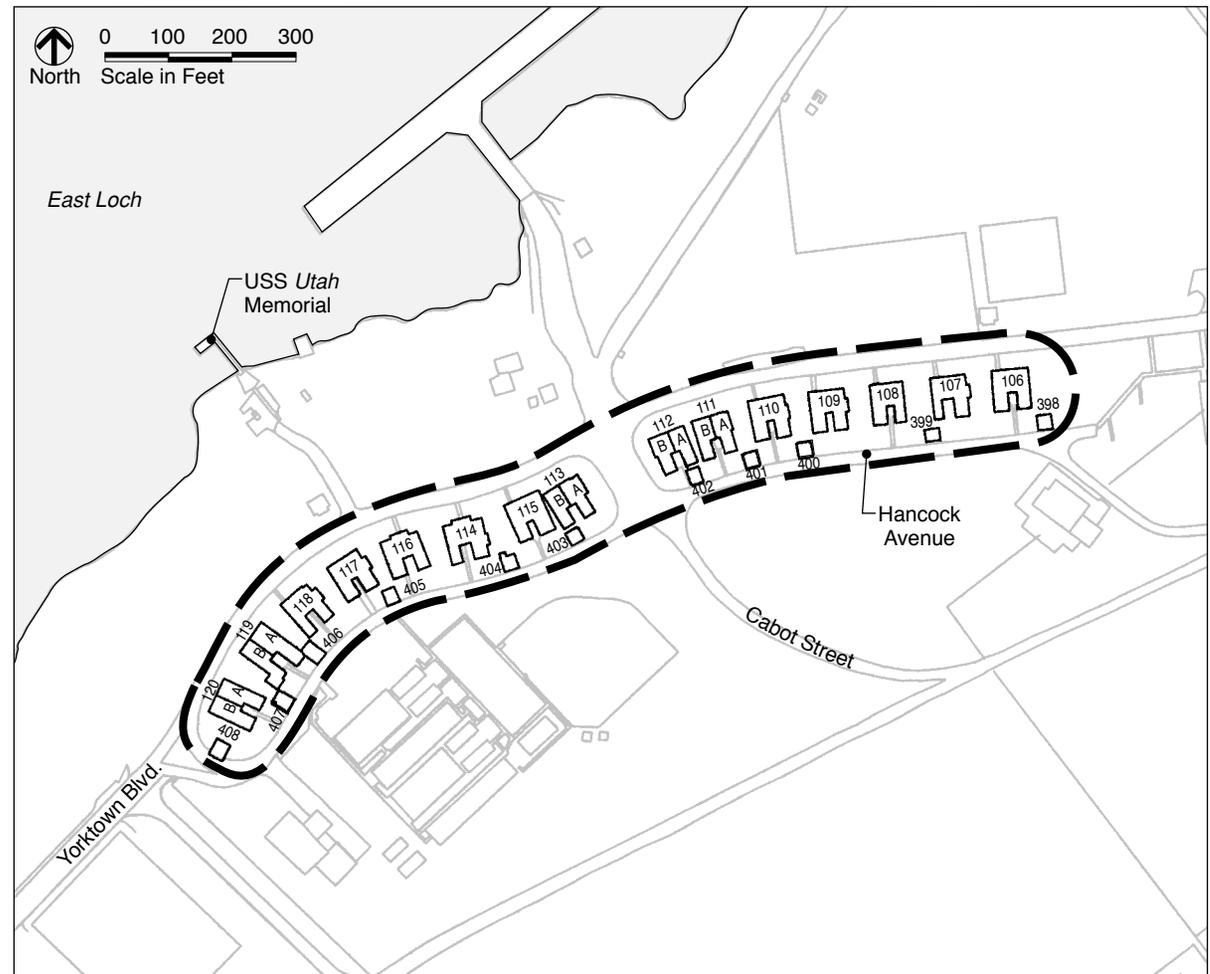
*Front and side view of Facility 829, Chapel and Duplex Quarters
Source: David Franzen Photography, April 2000*

Ford Island-Luke Field Neighborhood Significance

This row of houses is one of the three residential neighborhoods on Ford Island. Originally larger, the neighborhood now has 15 residential buildings, including ten houses (Facilities 106–110, 114–118) and five duplexes (Facilities 111–113, 119, 120) on Yorktown Boulevard, all built circa 1922. These residences form the largest set of buildings from the Army's Luke Air Field left in place when the Army Air Corps relocated to Hickam Field in 1939. The Luke Field neighborhood is significant for its association with both Army and Navy aviation history in Hawaii and for the Craftsman-style architecture of the quarters. It was involved in the December 7, 1941, attack due to its proximity to the USS *Utah* and other ships moored on that side of the island. During the early 1940s, construction took away some of the original row of houses, and numerous buildings were added around the remaining row of houses. Since WWII, most of those added buildings have been removed.

History of Luke Field Neighborhood and Army on Ford Island

See the Ford Island-North End neighborhood section for an overview of Navy history on Ford Island. Details of this neighborhood's early history, which is tied to Army aviation, are given below. The Army was the first military branch to build facilities on Ford Island, although 25 acres along the southeast side of the island had been purchased in



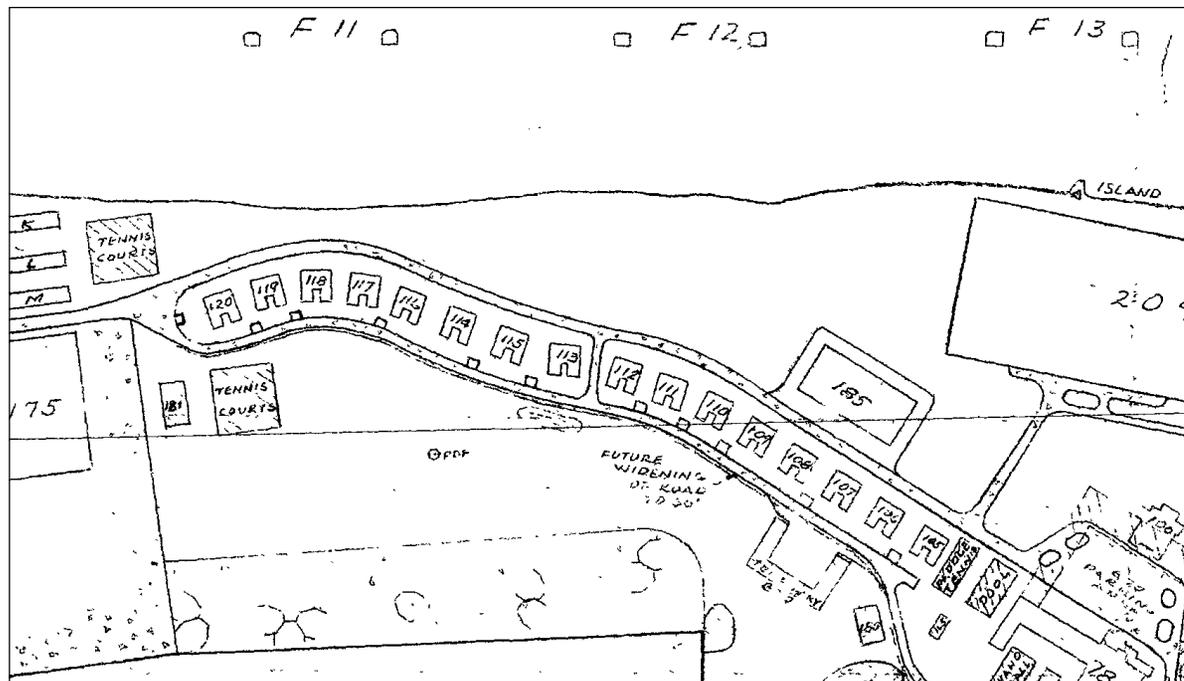
Luke Field neighborhood

1902 as part of the initial Navy installation at Pearl Harbor. The first Army structures on Ford Island were two gun batteries built in 1917 as defenses against enemy land forces that might approach Pearl

Harbor across the most accessible northern or western routes. When small parcels were purchased for these batteries in 1915, most of the island was in sugar cane cultivation.

The remainder of Ford Island was purchased from the Ii Estate in 1916 (Dorrance 1991: 5). The War Department decided that the Army and Navy could share the island as an aviation installation. Since the Navy already had the land on the southeast side, the Army established its buildings on the northwest side; the center of the island was set aside as a joint-use landing field. The Army air squadron transferred to Ford Island from Fort Kamehameha in late 1918, after two seaplane hangars and ramps, a warehouse, and a shop building had been erected, and a narrow strip cleared for landplanes (Yates 1936: 54). In 1919, the Army officially named its installation Luke Field, after World War I ace pilot Frank Luke.

The Army aviation officers remained at Fort Kamehameha or occupied the old cottages of the Ii-Brown family (U.S. Navy, Naval Air Station 1945:6), until housing was built for them on Ford Island. The Army houses are very similar at the two installations and similar to houses of that early period at Schofield Barracks. Between 1919 and 1922,



Luke Field neighborhood on Naval Air Station Ford Island, June 1942
Source: Pacific Division Naval Facilities Engineering Command

the Army built housing on Ford Island for married officers, starting with the Post Commander's house. Enlisted men were housed in tents or barracks. By 1922, there were 28 Officers' Quarters constructed along the northwest shore (Unknown author n.d.: 9). Of these, 10 single-family houses and five duplexes remain.

By 1927, there were eight Army aviation squadrons or groups based at Luke Field. A ninth group was added in 1930 (Addleman 1939: 46). With more aviation personnel based at Luke Field, additional buildings were erected on the southern

part of the northwest side. However, no additional Army officer housing was built on the island. The Army population on Ford Island probably peaked in the early 1930s. The first population decline was due the transfer of some Army aviation personnel to central Oahu, after the construction of more permanent buildings at Wheeler Field around 1932. In the last years of the decade, buildings, equipment, and men from Luke Field were gradually moved to Hickam Field using the ferry (Hewlett 1939). The last troops moved on October 31, 1939 (Anderson and Bouthillier 1996: 39).

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Luke Field housing, view down street, April 18, 1923
Source: U.S. Army Museum of Hawaii, #240

Notable accomplishments by Army aviators from Ford Island include an impressive set of early aerial photographs of the island chain, including the eruption of the Halemaumau pit in Kilauea Crater in 1930 (Vandergrift: 1938: 3). The most dramatic feat by Army planes based at Luke Field was the aerial bombing of a diversion route for a lava flow threatening Hilo in 1936 (Yates 1936: 62).

Only the row of 15 residential buildings and three hangars (Facilities 130, 133, and 174) remain as reminders of Army aviation history on Ford Island. Two Army batteries, Adair (Facility 446) and Boyd (Facility S 145), also remain. The former is the basement of the Navy Quarters K (Facility 330) in the North End neighborhood, and the latter located southwest of the Luke Field neighborhood is used for ammunition storage. The finger piers (Facility S 291) near Battery Boyd, originally built



Aerial of northern part of Luke Field housing, July 1936
 Source: National Archives Still Photo Collection, RG 71 CA, Box 152



Aerial of southern part of Luke Field housing, c. 1936
 Source: National Archives Still Photo Collection, RG 71 CA, Box 152

by the Army in 1922, were entirely rebuilt recently and are essentially a new facility.

In 1939, before the Army vacated Ford Island, the Navy started filling portions of the shoreline on the Army side, as can be seen in the photo to the right. The landfill was established to dispose of dredged spoils. Additional landfilling during the war resulted in all the houses being located farther from the shoreline than they were originally.

About 1940, the Navy added the garages behind the Luke Field quarters on Hancock Avenue. Vehicular ferry service to the island had increased the number of automobiles on the island. In the early 1940s, the Navy also started construction of new facilities that required land occupied by the Luke Field housing. Houses at both ends of the row of Army quarters were demolished around 1941 to make room for new Navy facilities. At the south

end, about eight of the Army officers' houses were demolished to make room for two large Navy hangars (Facilities 175 and 176). At the north end, three quarters were demolished when the Bachelor Officers' barracks (Facility 78) were built. The Post Commander's house remained during the 1940s and was converted to an officers' club. A surge of new construction occurred around the neighborhood after December 7, 1941.

During the December 7, 1941, Pearl Harbor attack, this neighborhood witnessed the bombings and strafing, although the Japanese planes concentrated more on the battleships on the other side of the island and on the planes parked along the side of the runway. Just offshore of these houses the USS *Utah* was sunk. The Japanese torpedoed this target-towing ship, mistaking her for an aircraft carrier. The USS *Raleigh*, USS *Detroit*, and USS

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Aerial of Luke Field housing, showing landfill, October 25, 1939
 Source: National Archives Still Photo Collection, RG 71 CA, Box 152



Aerial of Luke Field housing, showing Navy BOQ (Facility 78) at north end and hangar (Facility 175) at south end of row, December 10, 1941

Source: National Archives Still Photo Collection, RG 71 CA, Box 162

and winch machinery used for the salvage work on the USS *Oklahoma*. Salvage work on the USS *Utah* was suspended in 1944, after the ship had been partially righted and slightly moved to minimize interference with the aircraft carrier mooring berths on that side of the island. Soon after WWII, a historic marker was placed on the ship, visible only from the water. A pier with markers and a flagpole was built in 1972 from the shoreline out toward the sunken ship. In 1989, the USS *Utah* and the USS *Arizona* were declared as individual National Historic Landmarks within the Pearl Harbor National Historic Landmark district.

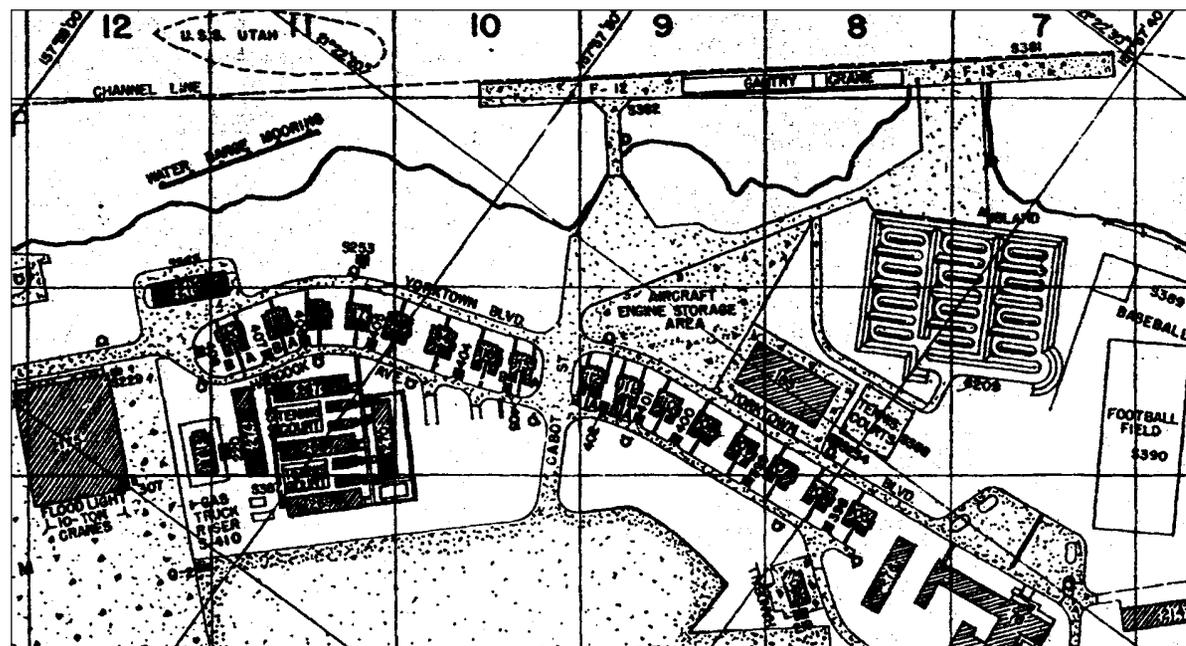
During the World War II years, numerous buildings were added on both the shoreline and the airfield sides of the Luke Field houses. These included two bomb-proof personnel shelters (Facilities S 180 and S 181) with attached fire and rescue stations (Facilities 219 and 220), constructed of concrete and extant. Most of the other WWII buildings (barracks, warehouse, fire station, etc.) near these houses were temporary wooden structures that have since been demolished.

Only limited changes have been made to the Luke Field houses since the early 1940s. Around 1942, the street between Facilities 112 and 113 was

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Tangiers moored on this side of the island also sustained some damage in the attack, but the greatest number of casualties were from the USS *Utah*. Although sailors were rescued from this ship after the attack, 58 men remain entombed in the USS *Utah*. Many wet and exhausted survivors of the attack not transferred elsewhere for medical attention were cared for at the Bachelor Officers' Quarters (Facility 78) by the women living in the nearby houses. The wives and other family members were here because this building, the only concrete building in the vicinity, was the designated bomb shelter for the families in the neighborhood.

After the attack, immediate salvage work was done on the USS *Utah*, including removal of the guns and ammunition and pumping out of the fuel oil (Wallin 1968: 263). Some further efforts were made in 1943 to right this ship with the same cable



Luke Field neighborhood on Naval Air Station Ford Island, June 1953

Source: Pacific Division Naval Facilities Engineering Command, Plan Files #551272

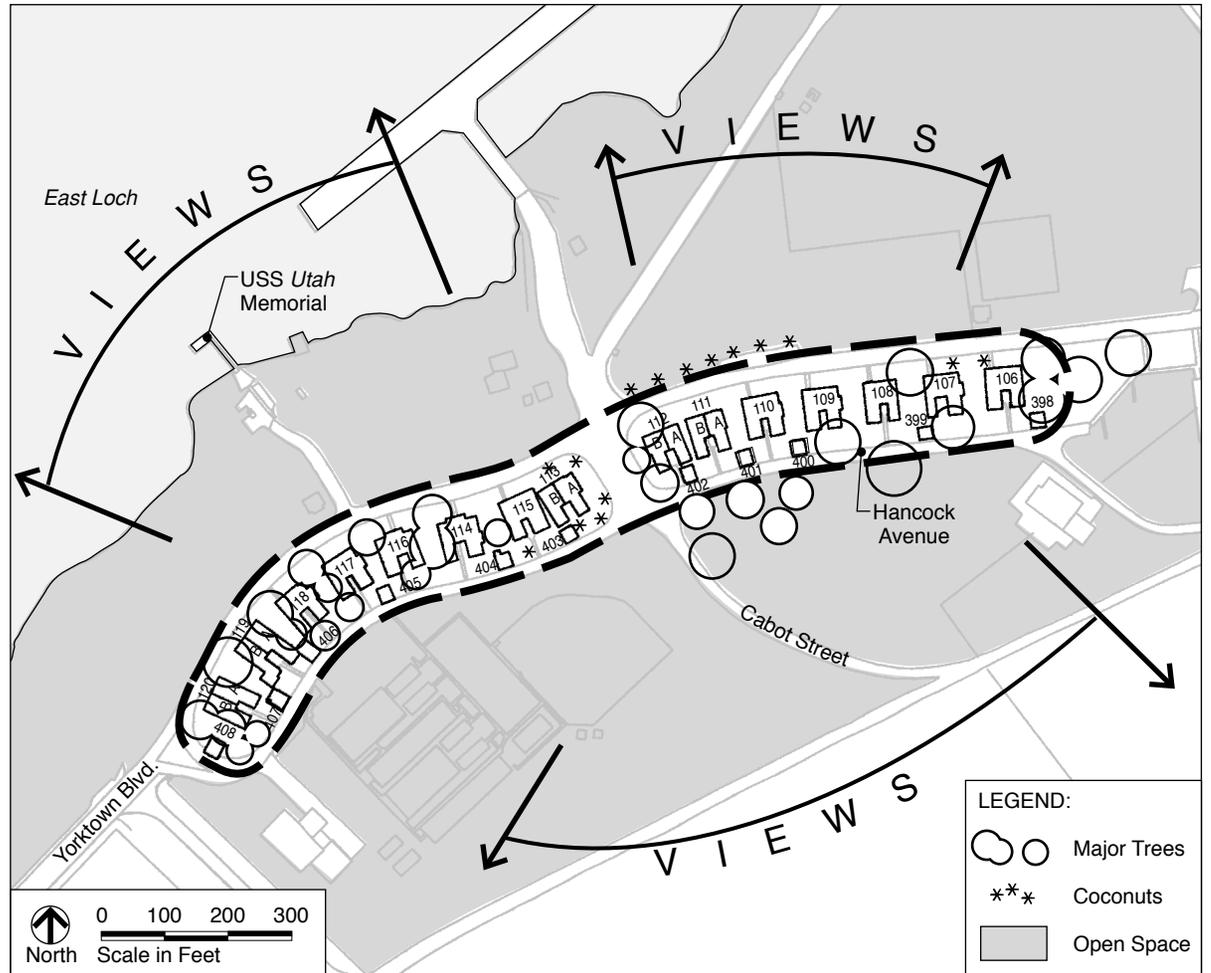


Aerial of Luke Field housing, showing buildings on both sides of row, April 14, 1944
 Source National Archives Still Photo Collection, #80-G-229787

widened, requiring slight relocation of those two duplexes. This widening allowed the passage of planes lifted off the decks of the aircraft carriers at moorings F11 and F12 to get to the runway and hangar area. One of the houses (Facility 119) was converted to a duplex during WWII. One house at the north end of the row (Facility 105) was demolished after a fire sometime after 1981. All of the houses have had repairs and re-roofing completed since WWII.

Major Landscape Features of Neighborhood

The Luke Field neighborhood's linear layout is a two-road design along Yorktown Boulevard and Hancock Avenue. Cabot Street bisects the neighborhood. There are no uniform tree plantings along these roads; rather, clusters of trees are sprawled throughout the area.



Ford Island-Luke Field landscape

Each of the quarters has a small front yard due to the close setback from Yorktown Boulevard. The landscaping has a tropical plant palette with color-

ful flowering shrubs around the front and side yards. To help provide some privacy between the units, flowering trees such as plumerias offer screening and



5-54 *Landscape at Ford Island-Luke Field*

color. The back yards have a less formal feel to the landscape. Large trees such as banyans and monkeypods in this space provide shade in the afternoons.

Due to the location of the neighborhood on Ford Island and its proximity to the runway, Luke Field Housing affords some of the better views on the island. The front area of the neighborhood along Yorktown Boulevard has views of the Koolau Mountain Range from Halawa to Pearl City, as well as views of the Waianae Mountain Range across Middle and West Loch. From Hancock Avenue at the rear of the neighborhood, one has views of the Battleship *Missouri* Memorial, the historic runway, and the historic control tower.

Major Trees/Palms

- Monkeypod
- Banyan
- Earpod
- Coconut

Other Trees

- Pink Tecoma
- Christmas berry
- Plumeria
- Brassiaia

Luke Field Housing Designs

This historic housing consists of 10 single-family houses and five duplexes on Yorktown Avenue. They are all one-story, wooden residences in a Craftsman style with four different designs. Two are single-family house designs and two are duplex designs, although Facility 119 was converted from a single-family house to a duplex around 1941. The corner entry design is almost identical to the 1916 houses at Fort Kamehameha and the 1919-1922 houses at Schofield Barracks. The Schofield Barracks variation of the design includes a fireplace, given the cool weather in Wahiawa, while the homes at Ford Island and Fort Kamehameha do not require fireplaces.

Characteristics of the three designs that are unique to Luke Field are analyzed below. No original plans and only limited renovation drawings are in the Pacific Division Naval Facilities Engineering Command Plan Files for any of the Luke Field houses, although the drawings for the corner entry design (labeled as “Company Officers Quarters”), also used at Schofield Barracks and Fort Kamehameha, are at the Army Directorate of Public Works Plan Files. Copies of these plans apparently were not transferred to the Navy.

Although the houses in this neighborhood are located on Yorktown Boulevard, the Navy database lists the addresses as the facility number followed by “Ford Is.” The address column has been deleted from the table below since it can be inferred from the facility numbers. For each half of the duplex, the address also contains the A or B unit designation.

An Army history report (Anonymous n.d.: 9) notes that some of the houses were built in 1921 and some in 1922, but specific dates for each house are not known. All are listed with a 1922 date in the Navy database.

Gable over Center Entry Design (Facilities 114 and 116)

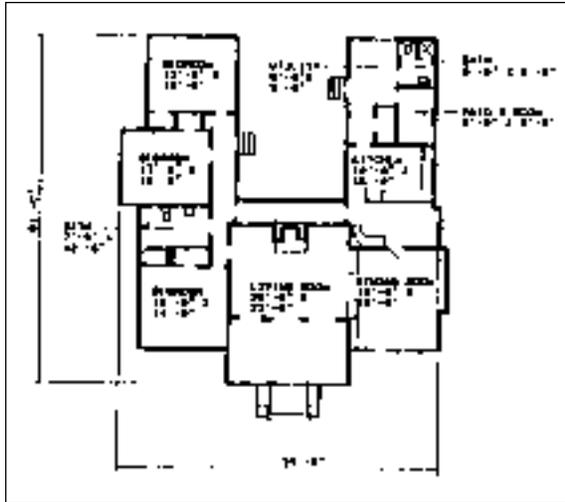
These two houses, although built at sea level, have fireplaces. The center entry quarters have a gable roof over an outset center section of the front facade. They appear to be the only two houses of this design ever built at Army installations. More elaborate than the corner entry design houses on Ford Island, these houses were probably built for higher-ranking officers.

Other houses with center entries at Schofield Barracks and Fort Kamehameha have different floor plans and can also be distinguished by differences on the front facade. Houses with center entries at Fort Kamehameha have a recessed central portion with entry stair under an extension of the hip roof. The center entry of each Type L Schofield Barracks house is only slightly recessed from the front plane of the houses, with no extension of the hip roof over the entry stair. The other center entry house at Schofield Barracks (Facility 509, Type M) and the only remaining duplex at that installation (Facility 409, Type K) were originally Bachelor Officers' Quarters (BOQ). Each of these former BOQs has a slightly recessed portion at the center of the front facade and a roof similar to the Type L houses, with an added gabled vent centered in the front part of the hip roof.

Facility #	Facility or Design Name	Notes	Date
114, 116	Gable over Center Entry Design	Design unique to Ford Island, Luke Field, but other center entry designs at Schofield Barracks and Fort Kamehameha	1921-22
111-113, 120	Duplex with Corner Entries Design	Design unique to Ford Island, Luke Field	1921-22
119	House Converted to Duplex	Building unique to Ford island, Luke Field	1921-22
106-110, 115, 117, 118	Corner Entry Design	Almost identical ones at Schofield Barracks and Fort Kamehameha	1921-22



*Facility 116, center-entry house design
Source: Mason Architects, Inc.*



Floor plan for Gable over Center Entry Design (Facilities 114 and 116)

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CHARACTER-DEFINING FEATURES OF FACILITIES 114 AND 116

Exterior Features:

- One-story wood-frame house with U-plan.
- Lava rock front wall foundation with lava rock piers on perimeter of sides and rear.
- Diagonal lattice between lava rock piers.
- Wood watertable.
- Board-and-batten siding below lintel level and board-on-board siding above it, in gable ends.
- Encircling trim board at lintel level.
- Brick chimney with arch over top.
- Complex roof with elaborate bracketed gables at front and sides of house and hipped roof sections with gablet vents on rear wings.



Gable over Center Entry Design (Facility 114) living room with fireplace

Source: Mason Architects, Inc.

- Brackets supporting lower rafters at gable ends, with spacing purlins between upper and lower rafters.
- Rectangular bay in one bedroom covered by extension of roof and supported by plain brackets.
- Brackets in gable ends milled with curve on lower side.
- Exposed clipped rafters.
- Wide eaves with board-and-batten sheathing.
- Wood louvers in gablet vents and openings in gable ends.
- Wood-sash windows, mostly six-over-six double-hung, but some sliding windows and casements.
- Wood-frame window screens.
- Two-light transom over double entry doors, each with one light over one panel.

Interior Features:

- Board-and-batten interior walls and ceilings with interior girt in most rooms at top of interior doors, about top quarter of windows.
- Picture molding and chair rail in living and dining rooms.
- Brick fireplace with bracketed shelf and panels above, between two double-hung windows opening onto hallway behind.
- Built-in window seat and china cabinets in dining room.
- Partial walls in cased opening between living and dining rooms.
- Wall with three multi-light double French doors between living room and lanai (Facility 116).



Gable over Center Entry Design (Facility 116) looking from living room to dining room

Source: Mason Architects, Inc.

- Built-in linen drawers in bedroom hall.
- Eight-inch wood base with quarter-round shoe molding throughout.
- Multi-panel wood doors with period hardware.
- Wide wood window and door casings.
- Hallway behind fireplace.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Concrete cheekwalls at front stair not original.
- Poor repointing of mortar joints on lava-rock front foundation wall.
- Pipe railing on courtyard stairs.
- Jalousie windows.
- Modern flush doors.
- Some modern hardware.
- Vinyl tile flooring.
- Plywood panels over board-and-batten hallway wall.
- Missing doors of built-in dining room cabinet.
- Modern lighting fixtures.
- Exterior conduits and piping.
- Aluminum-framed screens.
- Clips in the lower rafter board at front gable (Facility 114).
- Modern bathroom fixtures.

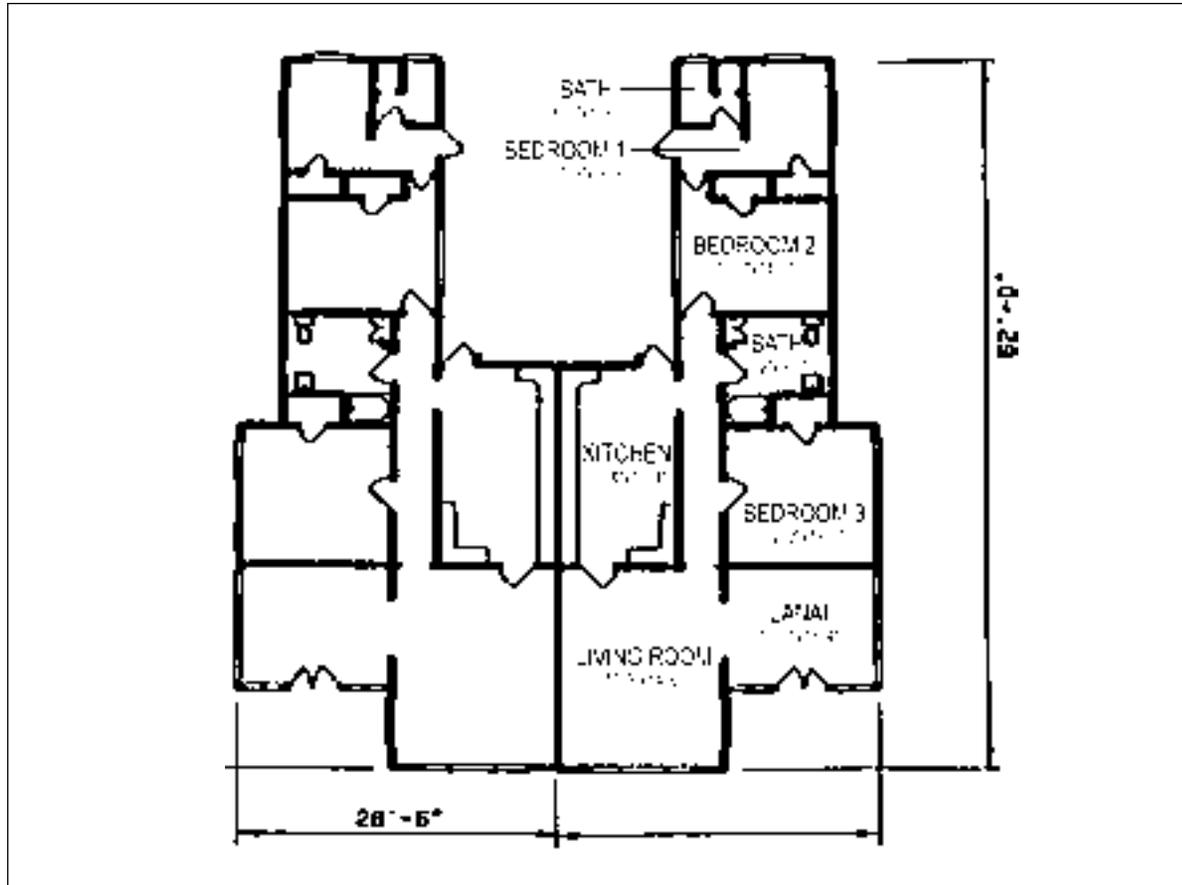


Facility 113, duplex with corner entries
 Source: Mason Architects, Inc.

Duplex with Corner Entries Design (Facilities 111, 112, 113, and 120)

These buildings are significant both architecturally and historically. They are the only extant quarters built as duplexes by the Army in the 1920s in Hawaii (the single 1928 duplex at Schofield Barracks was converted from a BOQ). Since designs used in Hawaii were usually not the same as Army quarters on the mainland U.S., these are probably unique examples on a national level. Architecturally these houses are a slightly less elaborate Craftsman

style than the corner entry or center entry designs, but they share features of both. The interior of only one of these eight duplex units was seen for this study, and it does not appear to be typical. Therefore, the 1987 report by Mariani & Associates Architects has been relied upon to describe most of interior character-defining features. The foundations of Facilities 112 and 113 are not original, as they were slightly relocated during WWII when the street between them was widened.



Floor plan for Duplex with Corner Entries Design (Facilities 111, 112, 113, and 120)



Facility 111, Unit B lanai interior

Source: Mason Architects, Inc.

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CHARACTER-DEFINING FEATURES OF DUPLEX WITH CORNER ENTRIES DESIGN

Exterior Features:

- One-story wood-frame duplex with symmetrical U-plan.

- Lava rock foundation piers and cheek walls at entry stairs (Facilities 111 and 120).
- Diagonal lattice between foundation piers.
- Board-and-batten siding with wood watertable.

- Girt high on wall.
- Wood-shingled complex roof with two levels of bracketed gables at sides of duplex; hipped roof sections with gable vents on rear wings.
- Exposed plumb-cut rafters.
- Pyramidal ends of joists projecting beyond gable roof sections.
- Wide eaves with board-and-batten sheathing.
- Distinctive gable-top vent with wood louvers in gable ends of entry wings.
- Angled piece of brackets over entries milled with curve on lower side and notched ends; plain brackets on gable ends.
- Wood-sash windows, mostly 6/6 double hung.
- Triplet 1/1 double hung windows in living room; narrower ones flanking wider central window.



Facility 111, Unit B built-in seats in kitchen
Source: Mason Architects, Inc.

- Three-light casement windows in original screened entry lanai.
- Wood-frame window screens.
- Double entry door with one-light over one-panel halves.

Interior Features:

- Board-and-batten walls.
- V-groove tongue-and-groove ceilings.
- Eight-inch wood base with quarter-round molding.
- Multi-panel wood doors, some with original hardware.
- Period medicine cabinet in main bathroom.
- Picture molding.
- Plate rail in living room.
- Wide wood door and window casings.



Hall of Facility 120, Unit A
Source: Mason Architects, Inc.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Foundation piers of concrete masonry units (Facility 113).
- Some wire mesh panels between foundation piers.
- Insertion of smaller casement windows and blocking down of openings flanking main entry (Facility 112, Unit A).



Living room of Facility 120, Unit A
Source: Mason Architects, Inc.

- Jalousie windows.
- Wood-louvered awnings over windows (Facilities 112 and 113).
- Plywood in transoms above doors.
- Aluminum downspouts.
- Irregular shingle-like flashing above lower gable roof, on wall surface of taller gable end.
- Plywood water heater enclosures.
- Exterior conduits and piping.
- Modern light fixtures.
- Modern hardware.
- Flush doors.
- Vinyl tile floors.
- Fiberboard ceilings and walls in some units.
- Modern fixtures in kitchen and bathroom.



Side view of Facility 119
Source: Mason Architects, Inc.

House Converted to Duplex (Facility 119)

This building was originally a single-family house, since a single path leads to a center entry in the 1936 photo. It was probably a high-ranking officer's house. Like the other two central entry houses (Facilities 114 and 116), it originally had a chimney, but it has a shed roof rather than a gable over the projecting front entry lanai. No other house

in this neighborhood, or at Fort Kamehameha or Schofield Barracks, is known to have been built with this plan.

The architectural features and historic photographs suggest that this house may have been the one originally built about 1919 as the post commander's house, at a location between what is

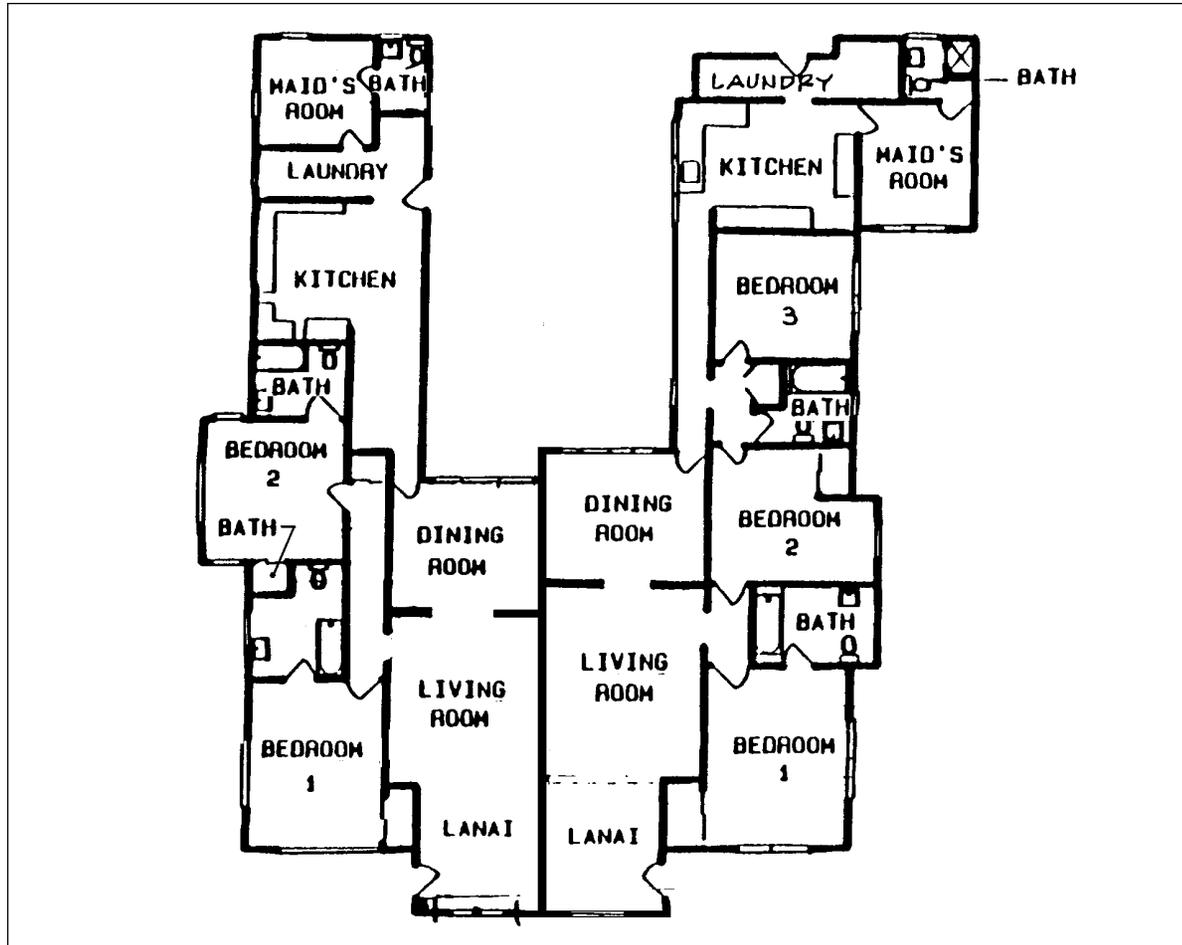
now Ranger Loop and Kingfisher Street. Major Sheldon Wheeler was the first occupant, until he died in a 1921 plane crash on the northern portion of Ford Island. Historic photos indicate the house was moved in the early 1920s when barracks were built along that loop road.

Reconstruction of the interior, including conversion to a duplex, was approved September 1941. The chimney and fireplace, located in the center of the living room, had to be removed when the house was divided in two. The entrances were then changed to each side of the projecting entry lanai, instead of one door in the center. Unlike the other duplexes, it is not symmetrical; Unit B has three bedrooms and Unit A only two bedrooms, not counting the maid's room in each unit. The laundry and maid's unit in Unit B appear to be an addition to the original house. Architectural features, especially on the interior, were somewhat compromised when it was duplexed, but it is still a unique example of this house design. The exterior was altered in 1996, when the original siding, of square-butt shingles that flared at the watertable, was replaced by board-and-batten siding which matched the other houses.

CHARACTER-DEFINING FEATURES OF FACILITY 119

Exterior Features:

- One-story wood-frame house (now duplex) originally with U-plan.
- Lava rock foundation with perimeter wall at front and piers elsewhere.
- Diagonal lattice between lava rock piers.



Facility 119 floor plan

- Slightly battered pillars and low wall of lava rock at entry lanai; concrete caps on pillars and wall.
- Board-and-batten siding with wood water-table.

- Encircling trim board at lintel level.
- Complex hip roof.
- Exposed plumb-cut rafters.
- Wide eaves.



Facility 119 window detail
Source: Mason Architects, Inc.

- Wood-sash windows, mostly paired casement or sliding, with six small lights above one large light.
- Wood window screens; stiffener aligned with window muntin.
- Six-light over one-panel entry doors.

Interior Features:

- Concrete bench seat on low lava rock wall at entry lanai.
- Canec walls and ceilings, with battens over panel joints.
- Paneled doors (one-, two-, and five-panel).
- Sliding closet doors probably not original but period appropriate.
- Wide wood window and door casings.
- Original or period-appropriate window hardware, such as window cranks and window screen chain-pull latches.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Aluminum-frame screen door at entry of Unit A.
- Exposed conduits.
- Water heater enclosures.
- Jalousie windows.
- Modern rear door.
- Some modern hardware.
- Paint on interior of lava rock pillars and wall under bench seat.
- Vinyl tile flooring.
- Modern kitchen and bathroom fixtures.

Design Similar to Other Neighborhoods— Corner Entry Design (Facilities 106-110, 115, 117, and 118)

For the corner entry design houses, the character-defining features and detracting elements are essentially the same as those listed in the Fort Kamehameha neighborhood section. The Schofield Barracks houses of this design are similar to both the Luke Field and Fort Kamehameha corner entry designs, but with fireplaces. In the Luke Field houses of this design, the exterior pilasters and diamond-patterned windows (wood muntins and leaded) are mostly missing and the interior details are simpler. The living and dining rooms are not as wide at Luke Field as they are in the Fort Kamehameha houses of the corner entry design. These differences may reflect budget constraints that required smaller rooms and the omission of some details in the 1921–22 Luke Field houses compared to the 1916 Fort Kamehameha ones. Some dissimilarities may also be due to removal of original features over the years. One change made in most of the Luke Field houses of this design was the remodeling of the kitchen and pantry into a larger kitchen area. In almost all houses of this design, in all three neighborhoods, the room layout at the end of the kitchen wing has been remodeled in various ways.



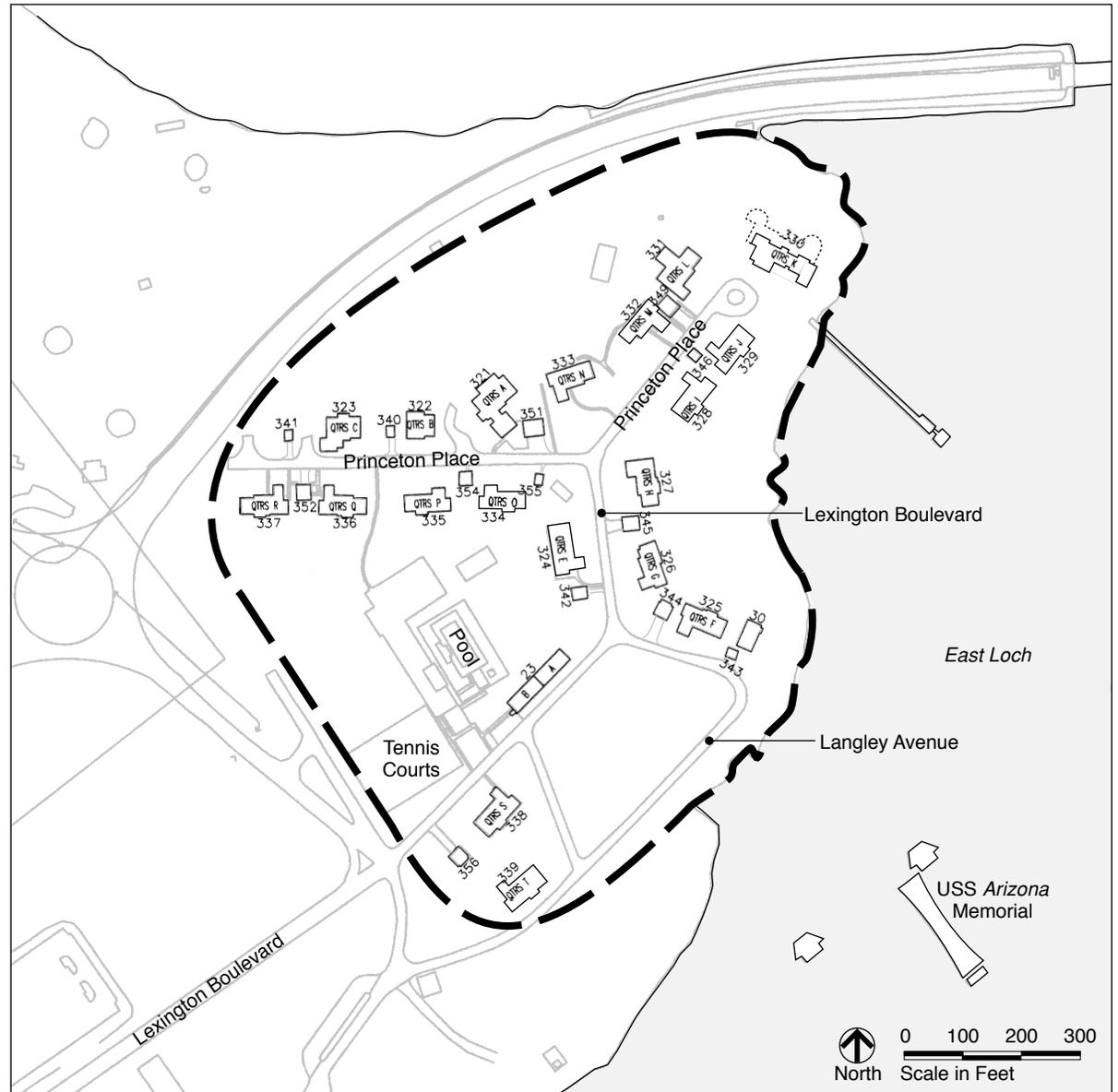
Interior of Facility 118
Source: Mason Architects, Inc.

Ford Island-North End Neighborhood Significance

This housing area, built for Navy aviation officers, is one of three residential neighborhoods on Ford Island. It includes three 1923 houses (Facilities 321, 322, and 323), 16 houses dating from 1936 (Facilities 324 to 339), and one duplex (Facility 23) originally used as servants' quarters. The latter is significant historically as the only extant servant's quarters at Pearl Harbor that originally held more than two servants' rooms since it was designed to serve the officers' barracks. In addition, one house (Facility 30) originally built in 1923 on Belleau Woods Loop was relocated to the neighborhood so it is included in the analysis of the CPO Quarters neighborhood. The North End neighborhood is significant for its association with naval aviation history in Hawaii and for the architecture of the officers' quarters. The neighborhood was also intimately involved in the December 7, 1941, attack and its aftermath, due to its proximity to Battleship Row.

History of Naval Aviation on Ford Island and the North End Neighborhood

A 25-acre strip of land along the southeast shore of Ford Island, along with other acreage on mainland Oahu, was purchased for the Naval Base in 1902. No construction was undertaken by the Navy on Ford Island for two decades. The Army was the first military branch to build facilities on Ford Island. The U.S. government acquired three



Ford Island North End neighborhood

additional parcels on the island from the John Ii Estate (Ltd.) on September 7, 1915 (Duncan 1918). Gun batteries were completed on two of these parcels in 1917, as part of the land defenses for Oahu's harbors and forts. Both Battery Adair (Facility 446) and Battery Boyd (Facility S 145) are extant, although the guns were removed in 1925; the former is the basement of the Commanding Officer's Quarters (Facility 330). See Ford Island-Luke Field neighborhood history for background information on early Army aviation on Ford Island.

Early Navy Development on Ford Island

The first Navy aviators arrived in Hawaii in 1919 and established a temporary base at Pearl Harbor's Navy Yard. The Navy planes were not moved to Ford Island until January 1923, after a permanent hangar and seaplane ramp had been constructed in the southeast corner of the island. The Navy's first official name for its Ford Island installation was Naval Air Station Pearl Harbor.

The early Navy aviation facilities were mostly clustered in the southeast end of Ford Island, except for housing that was built in two areas near the northeast tip. Of the approximately 40 facilities constructed before 1925, most were of timber construction. The majority has been replaced with buildings that are more permanent. Remaining are the first seaplane ramp, a concrete storehouse, three Officer's Quarters (Facilities 321, 322, and 323), and five houses (Facilities 28 to 32) for married Chief Petty Officers (CPOs), one of which (Facility 30) has been relocated. Also extant, but relocated and/or extensively remodeled, are the first power plant,



Expanding Army and Navy facilities on Ford Island, July 1936
Source: National Archives—No. 80-G-466095

some of the earliest shops/warehouses, and the servants' quarters (Facility 23).

Aviation on Ford Island in the late 1920s and 1930s

Developments in aircraft design and related aviation technology, as well as continuing expansion

of the aviation arms of both the Army and the Navy, led to a realization that Ford Island was too small to accommodate both services. Although site selection for a new Army airfield was done in 1928, purchase was not completed until 1935 (Anderson and Bouthillier 1996: 36). Ford Island continued to be

used by both the Army and Navy until 1939. Throughout these decades there was a history of rivalry between the Army and Navy air services. This rivalry contributed to technological improvements that spurred development of commercial aviation services in Hawaii.

The runway in the middle of the island constrained development, but part of the expansion pressures were relieved by incrementally increasing the island's acreage by filling in the shallow nearshore areas. When compared to 1936 aerial photos, the very irregular shoreline seen in a 1922 map (Public Works Officer) has been smoothed and pushed out, especially in the middle of the southeast shoreline. [Note that the shoreline was further modified during World War II but has not been substantially altered since 1945.]

Continuing Navy Expansion on Ford Island

In 1932, the Navy had 39 aircraft on Ford Island, both seaplanes and land-based patrol squadrons (Coletta 1985: 449). The emphasis was still on seaplanes—two seaplane hangars, four additional seaplane ramps, and a “seaplane beach” were built in 1932-35, all in the southeast corner of the island. However, the emphasis in Navy aviation shifted from seaplanes at shore air stations to carrier aircraft based on ships. Thus, by 1932, the activity on Ford Island was called a “Fleet Air Base” rather than a “Naval Air Station.” To support both the land-based seaplanes and the large numbers of carrier-based planes that occasionally visited Hawaii, more facilities were required. New construction on



Aerial of several 1936 Officers' Quarters, undated
 Source: National Archives Still Photo Collection, 71-CA-175A-3

Ford Island in the 1930s included the large Bachelor Enlisted Quarters, a large addition to the storehouse, and a cold storage building. In the northeast quadrant of the island, 16 additional houses for married

officers were constructed in 1936. The following year, nine four-plexes for housing additional Chief Petty Officers were erected on the newly reclaimed land created from the dredging spoils for the new



One of the 1936 Officers' Quarters, undated
Source: National Archives Still Photo Collection, 71-CA-175A-2

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mooring quays around the island. As the Navy was expanding in its narrow strip on the southeast side of the island, the separation between the housing and aviation work areas was shrinking. Changes to most of the shoreline on the southeast side of the island were undertaken in the 1930s.

Navy Aviation in Hawaii, 1939 to 1945

Aircraft carriers and their planes were not based at Pearl Harbor before 1939, although they had visited during earlier fleet exercises. There was no room for basing carrier planes on Ford Island until the Army moved its aviation operations to Hickam and Wheeler Fields in the late 1930s. The Navy gained complete control of Ford Island on November 1, 1939 (Naval Air Station 1945: 13).

In 1939, the Navy had only 11 air stations and eight reserve air bases in the continental U.S. Ford Island was still the Navy's only aviation facility in

Hawaii (Hewlett 1939). The need for additional naval aviation facilities was recognized in the December 1938 report to Congress by the Hepburn Board. Subsequently, authorization was given to expand the Ford Island air base, build new naval air stations on the mainland and at Kaneohe on Oahu, and develop air facilities on Midway, Johnston, and Palmyra Islands (U.S. Navy, Bureau of Yards & Docks 1947: Vol. II, 121). Later authorizations added naval air stations at Barbers Point and on Maui. A consortium of construction companies, Contractors Pacific Naval Air Bases (CPNAB), was awarded the contract to build all naval aviation facilities in the Pacific. CPNAB was responsible for most construction between 1939 and mid-1943, when the Naval Construction Battalions (CBs or Seabees) took over the work.

The CPNAB work on Ford Island originally consisted of "nine separate items, two-and-a-half million dollars worth of work. The projects ran the gamut from seaplane hangars and living quarters to shops and gasoline storage" (Woodbury 1946: 132). Numerous projects were added in quick succession, and the total spent by CPNAB on Ford Island facilities between 1939 and 1943 was over \$16 million (Contractors Pacific Naval Air Bases n.d.: A-569). The additional work was summarized as consisting of:

... vastly increased facilities for seaplanes and landplanes, munition storage, and fleet servicing. Seaplane ramps and parking areas, landplane runways and warm-up platforms were built; engine-overhaul and testing buildings, and two landplane

hangars were constructed (others reconstructed); 66 magazines and nine supply buildings were added to the storage facilities, as was 800,000 gallons of additional gasoline storage capacity; two "T" wharves, a dock, and fleet carrier moorings were established, for fleet servicing. Several specialized structures were built, also, including an operations-and-control tower, a Link trainer station, a low-pressure chamber, a transmitter building and radio towers, a decontamination station, a fire station, command and communication centers, aircraft bunkers—a vast amount of protective sheltering and splinterproofing. Housing facilities were increased, roads and services extended, additional administrative functions provided for (Contractors Pacific Naval Air Bases n.d.: A-576).

As the above description suggests, the December 7, 1941, attack affected the type of buildings constructed and the construction deadlines in the year or so following, but the bulk of the work proceeded as planned before the U.S. entry into the war. The land on the northwest side of the island was available to the Navy since the Army had moved, and additional acreage was added with fill materials from dredging and excavation projects. Most of the northwest shoreline was altered during WWII. The southern portion of the former Army side of the island was rebuilt with a large parking apron and four new seaplane ramps, not in the same location as the earlier Army seaplane ramps. The shoreline

was also pushed out on the northern portion, and much of that fill land was occupied by temporary buildings.

CPNAB had difficulties constructing all the projects under tight deadlines on an island where access was restricted by water transportation, congestion in the busy harbor, and competing military demands for the available ferries and wharves. Sometimes the workers could not be transported to the island until mid-morning, and at other times the workers would arrive on time but the building materials would not. Even travel from one side of the island to the other was restricted by permits (Contractors Pacific Naval Air Bases n.d.: A-602). The Contractors also had to frequently move their stockpiles and material sites, “in compliance with military requirements and orders” (Contractors Pacific Naval Air Bases n.d.: A-595). Their accomplishments on Ford Island in a few years, transforming the small air facility into a major air station, were remarkable. Naval Air Station Pearl Harbor, as it was known to the Pacific Fleet during WWII, became “one of utmost importance to the Navy in the Pacific area” (Naval Air Station 1945: 19).

Because the Pearl Harbor attack had damaged or sunk all the battleships in Hawaii, the Naval war in the Pacific became a fast carrier war (Reynolds 1992: 22). Through the first part of the war, the single-carrier task force was typical because of the limited number of carriers. After the Battles of the Coral Sea and Midway, Admiral Ernest J. King, Commander in Chief of the U.S. Fleet and Chief of Naval Operations, issued a policy forbidding two carriers to operate together (Reynolds 1992: 30).



Aerial of Ford Island on April 6, 1944
Source: National Archives—No. 80-G-229785

There were experiments with two-carrier task formations, and a British carrier, the *Victorious*, was loaned to the Pacific Command for a few months in 1943. This British ship trained in Pearl Harbor from March to May 1943 (Reynolds 1992: 35). By the spring of 1943, the U.S. scientific and industrial community, the “sleeping giant” that the Japanese military had feared, had constructed the Essex-class fast heavy carriers, the Independence-class fast light carriers, and the first escort carrier, the *Long Island*. “By the end of 1943 the Navy air arm had added 48 new carriers and a year later, the number had doubled, with the majority assigned to Pacific waters (Sunderman 1981: 73).

Besides new carriers, many new carrier planes were being developed in the U.S. to improve the odds against the Japanese Zero, which was the superior plane at the beginning of the war. There

was a transition to assign more fighter planes to carriers and to develop a combined dive bomber and torpedo bomber. Better aircraft were developed, and, the number of U.S. planes quickly surpassed Japan’s. “Japanese air power was geared for a quick offensive war, not a long drawn-out defensive war of attrition” (Sunderman 1981: 73). Between July 1940 and August 1945, the U.S. aircraft companies produced 174,000 combat planes for the Army, Navy, and Marines.

Captain James G. Daniels (1999), who served for four years on the USS *Enterprise* starting in September 1939, stated that usually only one carrier was in port at Pearl Harbor at any one time during the war years. One of the reasons for this, at least in the early part of the war, 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 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.

There were at least 12 fast carriers in the Pacific by the middle of WWII, and all of them made stops at Pearl Harbor for repairs, upgrades, and/or supplies on the way to and from battles. Before the summer of 1944, carriers always returned to Pearl Harbor to pick up their new air group and train for 10 days. After that date, “all new air groups trained aboard available carriers at San Diego or Hawaii, and after qualification were ferried to their ships at the advanced anchorages just prior to going into combat” (Reynolds 1992: 230).

During the war, an aircraft pool was created on Ford Island “to form a reserve supply which carriers, air groups and squadrons could draw upon to supplement their aircraft complement” (Naval Air Station 1945: 18). This pool was considered one of the most important functions of Naval Air Station Pearl Harbor.

Patrol planes, mostly seaplanes, continued to occupy the southeast corner of Ford Island. Because they were based here, their repairs and upgrades could be scheduled more evenly, with less time pressures than the carrier plane work. Some facilities, such as the engine test building at the south end of the island, served both the patrol and carrier planes. Aircraft engines required rebuilding or replacement after a certain amount of operational time was reached.

Ford Island was the smallest of the Naval Air Stations (NAS) in Hawaii, with larger bases established during WWII on Oahu (NAS Barbers Point), on Maui (NAS Puunene and NAS Kahului), and on the island of Hawaii (NAS Hilo). However, Ford Island was the administrative hub from which the Pacific air war was planned and directed. It was also the only air station in Hawaii where aircraft carriers could dock directly adjacent to the hangars and other support facilities.

Post-WWII on Ford Island

After WWII, operations at Naval Air Station (NAS) Pearl Harbor declined. With the development of jets and larger aircraft and their need for longer runways, most air activities moved to NAS Barbers Point, 10 miles to the west of Pearl Harbor. A

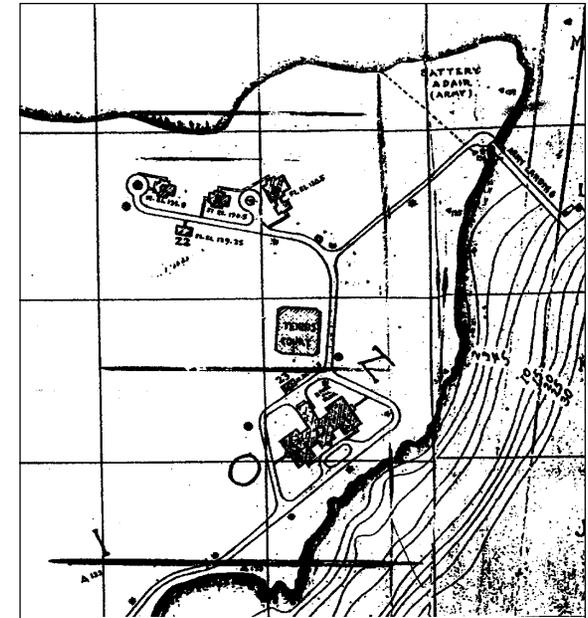
jet engine test building replaced the earlier engine test building on the southeast end of the runway in 1946. Sometime after the war, the name of NAS Pearl Harbor was changed to NAS Ford Island. There was a brief flurry of activity on Ford Island during the Korean War. The air station was decommissioned in March 1962, and Ford Island was placed under Naval Station Pearl Harbor.

There was relatively little change on Ford Island, especially in the residential areas, after WWII. The Ford Island neighborhoods remained desirable housing areas, despite dependence on ferry service for access to and from the island until the Admiral Clarey Bridge was completed in 1999. Since the opening of the bridge, plans to build additional housing on Ford Island have been developed.

Specific History of the Ford Island-North End Neighborhood

The three 1923 Officers’ Quarters in the Ford Island-North End neighborhood were originally separated from the cluster of CPO houses on the eastern shoreline of Ford Island. Besides the physical separation, the rank distinctions between officers and enlisted personnel were also emphasized by the size and other design differences in the houses for these two groups. In 1936, construction of the additional officers’ housing at the north end of the island filled in much of the open space between these two neighborhoods.

A 1921 plan for the North End neighborhood showed that only two houses for married officers were originally to be built, along with a large H-plan Bachelor Officers’ Quarters (BOQ) and a



North End neighborhood on Ford Island, June 1924
Source: National Archives, courtesy Earth Tech

servant’s quarters near the latter. Dotted lines showed possible future expansion, including one more BOQ, one more servants’ quarters, 10 more houses for officers, and six tennis courts. Three houses, rather than two, were part of the first contract, and they were not sited in the straight line shown on the 1921 plan.

Historic photos show that three original Officers’ Quarters were mostly completed by the end of 1922, but the road construction to the houses was not started until January 1923. In addition to the houses for married officers, there was also a large wooden BOQ barracks and two servants’ quarters

buildings, as seen in the photo below. One servants' quarters was located near the BOQ and the other was located across the street from two of the houses. The room for servant(s) for Quarters A (after WWII also known as Facility 321) was built into an attached wing. The 1920s historic photos and maps show the three houses spaced along a road with two circles for parking vehicles, but no garages. The shoreline was then close to the rear of these houses. When the island was expanded by landfill during WWII, the shoreline moved much farther away.



Married Officers' Quarters with BOQ in background, 1923
Source: National Archives Still Photo Collection, RG 71 CA, Box 152

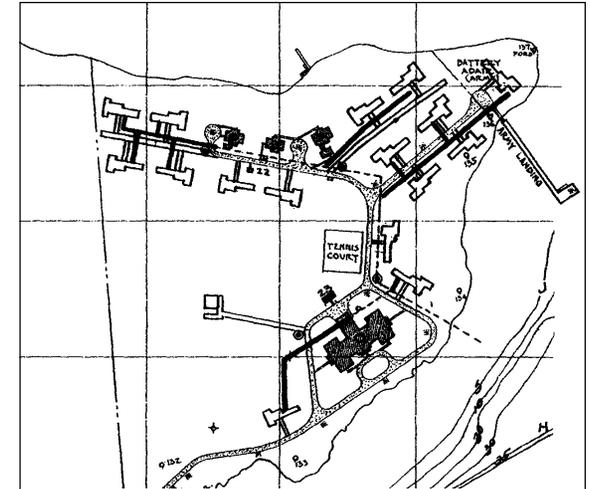
The neighborhood did not change much during the 1920s, except for the addition of a garage or two across the street from the houses (as seen in the photo to the right). By 1932, there were plans to expand the Navy's air station and to change the name to a Fleet Air Base. Plans included additional aviation-related buildings as well as 16 new Officers' Quarters, plus more CPO housing as discussed in

that neighborhood's history. In 1934, a magazine was built to the south of the three existing Officers' Quarters. It is surprising that this was built, given plans to add more housing. However, a 1935 letter noted "it is neither an unsightly nor a dangerous neighbor to living quarters, containing as it does only small arms ammunition" (Yarnell 1935: 3).

The design history of the 1936 officers' houses was complicated. Plans were developed in 1935 by the Navy Bureau of Yards and Docks, but the Fourteenth Naval District and the Fleet Air Base officials proposed a different floor plan and type of construction (Yarnell 1935). Their proposal suggested placing the Commanding Officer's Quarters on top of the abandoned Battery Adair if it could be obtained from the Army. The Fourteenth Naval District's proposal was to change the Bureau's layout of the new houses, so that rear yards opened



Officers' Quarters A, B, and C, 1932
Source: National Archives Still Photo Collection, 71-CA-175A-1



North End neighborhood (existing and proposed buildings) on Ford Island, June 1932

Source: Pacific Division Naval Facilities Engineering

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either to the water or to large open lawns. In terms of construction, the Fourteenth Naval District proposed concrete slabs at grade, rather than floors elevated on piers. They also suggested "single-board" or "single-wall" type of construction, which they noted "has been developed locally to a high degree of perfection" (Yarnell 1935: 4). The main advantage cited for the single-wall construction was the lack of hidden spaces for termites.

The site plan developed by the Fourteenth Naval District (drawing V-N4-162) in 1936 was built almost as shown, except that the pathways along the rear of the houses and a circular walkway with radiating arms between Quarters E and O were not constructed. Also, three additional officers' houses, shown on this 1936 site plan as dotted

outlines along Lexington Boulevard, were not built; they would have required removal of Facility 23 and some tennis courts.

The 1935 architectural plans prepared by the Bureau of Yards and Docks (Y&D) had three design variations. The base Y&D design had four bedrooms with concrete walls, L-plan lanai, and attached garages. Alternative designs had similar floor plans for four- or three-bedroom houses with wood walls. In 1936, Y&D changed their design in response to the proposals by the Fourteenth Naval District. However, the houses are still double-walled, not single-wall construction. Instead of two variations in floor plans (three- and four-bedrooms), the houses were originally all identical, except that the floor plans of some were reversed. They are wood-framed houses on concrete slabs with a room-like lanai in a corner and with detached carports. These carports are dated 1939 in the Navy's database; however, historic photos show they were built about the same time as the houses and certainly no later than 1937.

The North End neighborhood was greatly affected by the December 7, 1941, attack and its aftermath, due to its location adjacent to Battleship Row. This neighborhood was closest to several ships, including the USS *Arizona* where one of the biggest explosions and the greatest loss of life occurred. The former Battery Adair (Facility 446), the basement of Quarters K (Facility 330), was the designated air raid shelter for the neighborhood. The families of officers living on Ford Island took refuge there, as did numerous men from the nearby battleships (Shoemaker *et al.* 1941). Explosions on ships and fires on the oil-coated waters adjacent to



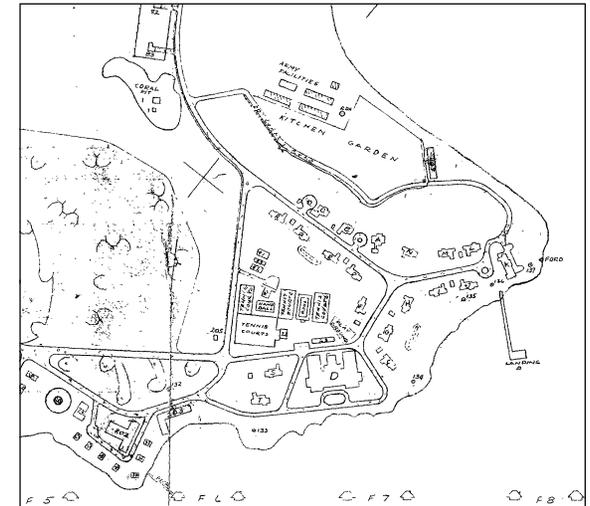
Japanese aerial photo of Pearl Harbor's "Battleship Row" soon after the USS *Arizona* exploded
Source: Naval History Center # NH 50932

the neighborhood threatened the wood houses. Eyewitnesses (Shoemaker *et al.* 1941) reported that several houses were hit by shrapnel and blazing objects from the USS *Arizona*, including one of the CPO Quarters houses and Quarters A (Facility 321) in the North End neighborhood. The neighborhood also sustained three bomb strikes believed to be from the second wave of dive-bombers that could not see their targets because of the smoke. Some of those who reached shore through oily, fire-covered waters were treated or billeted in houses in this neighborhood, resulting in minor damage to the quarters.

Fires started in the attack or sparked by other fires continued on some of the ships for several days. Smoke and sparks from these fires damaged and threatened the downwind neighborhood of the CPO quarters more often than they did the adjacent North End neighborhood. Salvage started almost immediately on the damaged ships of Battleship Row, but the USS *Oklahoma* remained over-

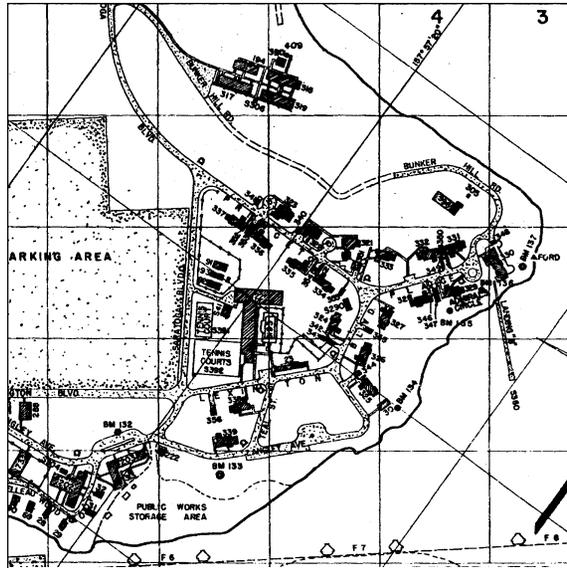
turned at its mooring as a grim reminder of the attack. It was several years before the ship was righted and moved to a drydock for repair.

The 1942 map of Ford Island below shows several things added to the North End neighborhood after it had been expanded in 1936. A swimming pool and several tennis courts were added in the late 1930s, as well as a playground and a handball court. Two small greenhouses and a garden tool shed were also built north of the recreational facilities. During the war, a kitchen garden was established in the filled area to the west of the North



North End neighborhood on Ford Island, June 1942
Source: Pacific Division Naval Facilities Engineering

End neighborhood. Temporary barracks and Army facilities were also built on this fill land. Two air raid shelters are shown as oval shapes in the neighborhood on the 1942 map.



North End neighborhood on Ford Island, June 1953
 Source: Pacific Division Naval Facilities Engineering Command, Plan Files #551272

The 1953 map of Ford Island above shows that the “Army facilities” were being used for Navy enlisted men’s quarters, but that the 1923 and WWII barracks buildings and the kitchen garden were gone. A large T-shaped building (Facility 22) between the pool and tennis courts was labeled as an Officers’ Club House, probably built in the later years of WWII. In the mid-1940s, a bomb shelter (Facility S 96) had also been built in the neighborhood to supplement or replace the air raid shelters. An electrical substation (Facility S 290) was added to the neighborhood in 1947. By 1953, Facility 30 had been relocated from the CPO Quarters area to its present site on Langley Avenue.

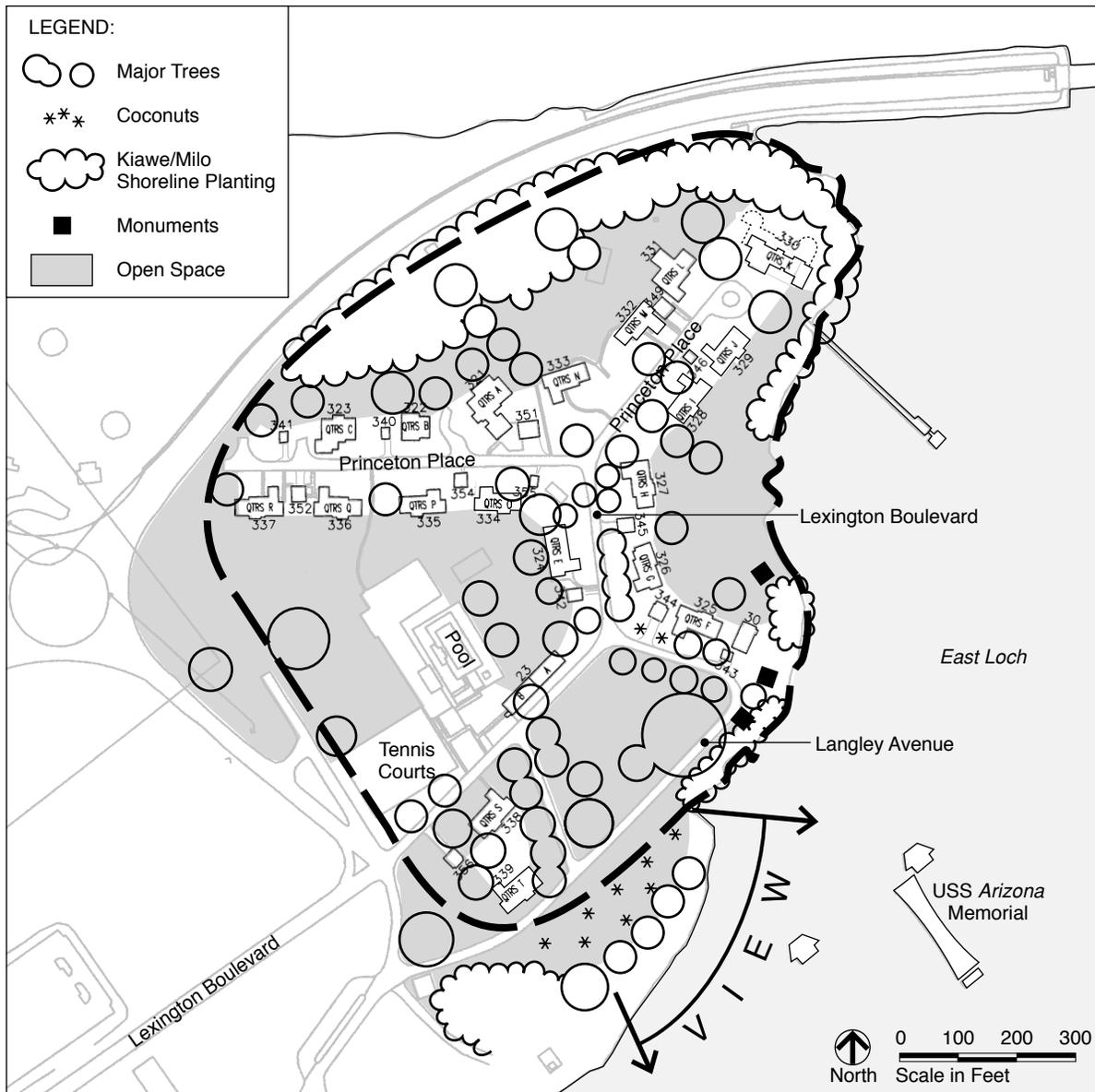
Since 1953, the major change to the neighborhood was the 1999 construction of the Admiral Clarey Bridge, with its terminus on Ford Island near Quarters K. The approach road runs near several other quarters. A few buildings have been removed since 1953, including the Officers’ Club House (Facility 22), greenhouses (Facilities 91 and 92), tool shed (Facility 93), and magazine (Facility 41). The underground bomb shelter remains (Facility S 96); however, its entrances are covered up and it is no longer on the Navy facilities inventory.

Major Landscape Features of Neighborhood

Lexington Boulevard is the main access into the North End neighborhood. Once into the housing area, it becomes a tree-lined street with large monkeypods and ironwoods. At the end of Lexington Boulevard, the neighborhood splits along Princeton Place. Princeton Place is another tree-lined street with large monkeypods. Langley Avenue loops around to meet Lexington Boulevard, creating a park-like open space. Much of the perimeter of this



Landscape along Lexington Boulevard, North End neighborhood
 Source: Belt Collins



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Landscape of the Ford Island-North End neighborhood

neighborhood is overgrown with large *kiawe*, *milo*, and *haole koa*, which grow to the water's edge.

The Admiral Clarey Bridge and access road running along the northern edge of the neighborhood are screened from the neighborhood by large trees. The quarters are set back a little from the street, creating a front yard space. Much of the foundation planting is tropical in nature and unique in design to each of the units.

The main unifying element throughout this neighborhood is the large street trees, mostly monkeypods. Other smaller trees such as royal poinciana, plumeria, brassia, and African tulip are found throughout the neighborhood.

Langley Avenue looping back to meeting Lexington Boulevard creates the main open space of the neighborhood. This space contains a number of large monkeypods and rainbow showers, and one very large banyan tree. Around this area are also site monuments, memorializing events of the attack on Pearl Harbor.

Centrally located at the entrance into the neighborhood is a community recreation area with tennis courts and a swimming pool. The Ford Island Golf Course lies to the west of the neighborhood, just across the road that leads to the Admiral Clarey Bridge.

Major Trees/Palms

- Monkeypods
- Banyan
- Earpod
- Ironwood
- Coconut

Other Trees

- African tulip
- Shower tree
- Christmas berry
- Plumeria
- Brassaia

North End Neighborhood Housing Designs

This historic housing area has quarters dating from 1923 and 1936. As mentioned above, one 1923 house was relocated here; that house (Facility 30) is discussed in the CPO Quarters neighborhood since it is not like the other quarters in the North End neighborhood. One building (Facility 23) was originally built in 1923 as servants' quarters but converted to a duplex in the late 1940s or early 1950s. The duplex is not evaluated in detail in this report due to the likelihood that it will soon be demolished. The duplex is historically significant, as noted in the introductory paragraph; however, it was greatly altered in its conversion to a duplex and by other renovations over the years. The other houses in this neighborhood are all one-story, single-family wooden residences which have more historic integrity and a slightly more elaborate architectural style than Facility 23.

Four different housing designs are featured in the 19 residences in this neighborhood (not including Facilities 23 and 30): two designs for the three officers' houses built in 1923, and two more designs for the 16 houses erected in 1936. Both the 1923 and 1936 Commanding Officer's Quarters were

Facility #	Addresses	Facility or Design Name	Date
321	Quarters A Ford Is (Princeton Place)	1923 Commanding Officer's Quarters	1923
322 & 323	Quarters B & C Ford Is (Princeton Place)	1923 Officers' Quarters Design	1923
23	23-A and 23-B Ford Is (Lexington Boulevard)	Servants' Quarters (became Duplex)	1923 (before 1953)
324-329 & 331-339	Quarters E-J & L-T Ford Is (Lexington Boulevard, Princeton Place, and Langley Avenue)	1936 Officers' Quarters Design	1936
330	Quarters K Ford Is (Princeton Place)	1936 Commanding Officer's Quarters	1936

designed to be obviously different from the other Officers' Quarters. The 1923 Commanding Officer's Quarters is distinctive because of the wing holding the kitchen and service spaces. The 1936 Commanding Officer's Quarters (Facility 330, Quarters K) is distinctive because it was sited on top of Battery Adair. Other than the basement space that the gun position provided, the house was originally about the same size as the other 1936 Officers' Quarters. However, it was enlarged in 1939 by incorporating an originally separate guest cottage. The characteristics of these four designs are analyzed below.

Note that the table above gives the address officially used by the Navy, which in this neighborhood is the letter originally used to designate the house, after the word "Quarters" and before "Ford Is." The only exceptions are the duplex units, which use the facility number and the unit letter for their

addresses. The name(s) of the street(s) on which the house(s) is (are) built are given in parentheses.

5-73

1923 Commanding Officer's Quarters (Facility 321)

Although difficult to categorize, this design can be considered a very simplified Craftsman style with many elements common to sugar plantation housing in Hawaii. The Commanding Officer's Quarters was larger and had a more complex floor plan than the other two Officer's Quarters built on Ford Island in 1923.

The original plans and a few renovation drawings are in the Pacific Division Naval Facilities Engineering Command Plan Files. Most of the changes made to the house are not documented in drawings. The design is somewhat similar to that used in the 1916 Hale Alii one-story Officers' Quarters. In this house the kitchen and the servant's room are in



5-74

Facility 321 (1923 Commanding Officer's House, Quarters A)
Source: Mason Architects, Inc.

the wing that is attached by a covered passage. In both this design and the 1916 Hale Alii design, front and back lanai were originally on either side of the living room. Over the years, the living room in each has been enlarged by removing the original exterior wall between the living room and lanai. In this house, however, a new and larger front lanai has been enclosed, while the original front lanai in the Hale Alii houses was simply enclosed. The original screened passage to the kitchen was enlarged and enclosed at some date to become the dining room

but is currently used as an entry room. The rear lanai, (called family room on this plan) also enclosed, is currently being used as a dining room. The original dining room was converted to a bedroom, and a new bathroom was added to the side of it. Another addition abuts a bedroom on the other side of the house. The interior closet and bathroom configurations have also been changed over the decades. Despite these changes, the house retains significant architectural integrity.

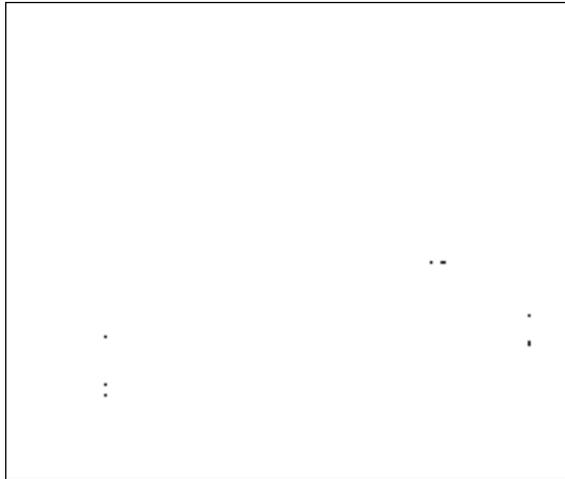
CHARACTER-DEFINING FEATURES OF FACILITY 321

Exterior Features:

- One-story wood-frame house with lava rock and concrete foundation piers.
- Diagonal wood lattice between foundation piers.
- Board-and-batten siding with 5-inch-wide battens over 12-inch-wide boards.
- Wood water table.
- Shingled complex hip roof with wide overhanging eaves.
- Plumb-cut, exposed rafters.
- Lava rock chimney.
- Multi-light over panel doors.
- Some transoms over doors.
- Paired and single casement windows in various multi-light configurations.



Facility 321 front lanai and extension (now Study and part of Living Room)
Source: Mason Architects, Inc.



Facility 321 floor plan

- Sliding windows enclosing portion of passage to kitchen.
- Wide wood door and window casings.

Interior Features:

- Board-and-batten walls at original lanai.
- Elsewhere, canec walls with picture rails and 8-inch wood baseboards.
- Canec ceilings throughout.
- Five-panel doors with period hardware.
- Interior wood-framed window screens for casement windows.
- Wide wood door and window casings.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Composition roof shingles (instead of original wood shingles).

- Shed roof extensions over new lanai.
- Concrete stairs with pipe railings.
- Fixed glass replacing original casement windows in living room.
- A/C window units.
- Vinyl floors.
- Modern hardware.
- Modern kitchen and bathroom fixtures.
- Louvered wood closet door.

1923 Officers' Quarters Design (Facilities 322 and 323)

These two houses have a very simplified Craftsman style with many elements common to sugar plantation housing in Hawaii. They are smaller than the Commanding Officer's Quarters, lacking the wing with the kitchen and servant's room. Otherwise, they share many of the same design details and features. Historic photos indicate that the two houses were originally identical, basically rectangular in plan except for the two lanai, which were partially inset and partially projecting.



Facility 322, 1923 Officers' Quarters
Source: Mason Architects, Inc.

The original plans and a few renovation drawings are in the Pacific Division Naval Facilities Engineering Command Plan Files. Most of the changes made to the houses are not documented in drawings. These two houses are somewhat similar to the Pharmacists' Quarters built at Hospital Point in 1925. Both are bilaterally symmetrical and oriented with their "front" lanai closest to the water. Originally, there were no servant's room and bathroom in these two Ford Island houses. These were added to each in a different configuration, with the new rooms attached to the kitchen of Facility 322 (Quarters B) and to the "rear" lanai of Facility 323 (Quarters C). The addition to Facility 323 is on the street side and involved the removal of the original

lanai entrance. Thus, entry to Facility 323 is awkward, either through the side kitchen door, through the servant's room, or at the side of the house away from the street. The addition to Facility 323 is larger than 322's, including another bedroom and bathroom, as well as a servant's room and bathroom. An addition on the other side of Facility 323 enlarged the master bedroom.

Most of the closet layouts have been altered. The kitchen in each has been remodeled to incorporate the original utility porch. Some of the alterations are in keeping with the character of the houses, such as changing the original double doors to a single door with sidelights in Facility 322. The single wood door has multi lights over panels, which is similar in character to the original double doors. Other changes appear to be compromises; for instance, an additional window in the kitchen of Facility 322 accommodates an air-conditioning unit without requiring alteration of the original adjacent pair of windows.

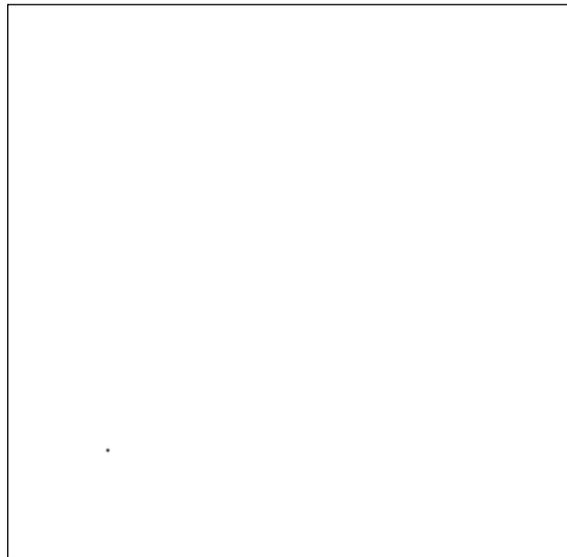
CHARACTER-DEFINING FEATURES OF 1923 OFFICERS' QUARTERS

- One-story wood-frame house with lava rock and concrete foundation piers.
- Diagonal wood lattice between foundation piers.
- Board-and-batten siding with 5-inch-wide battens over 12-inch-wide boards.
- Wood water table.
- Shingled complex hip roof with wide overhanging eaves.
- Plumb-cut, exposed rafters.
- Lava rock chimney.
- Multi-light over panel doors.
- Transoms over some doors.
- Paired and single casement windows in various multi-light configurations.
- Wide wood door and window casings.



Facility 322 living room
Source: Mason Architects, Inc.

The interior layout of the original part of both houses has been changed considerably with the enclosure of the lanai. Removal of the wall between the living room and the front lanai has expanded the living room space. The rear lanai has been converted to a dining room or family room, and the original dining room has been converted to a bedroom (Facility 322) or family room (Facility 323).



Facility 322 floor plan

Interior Features:

- Board-and-batten walls at original lanai.
- Elsewhere, mostly vertical tongue-and-groove-walls with center groove and 10 inch wood baseboards (Facility 322).
- Canec ceilings in most rooms.
- Five-panel doors with period hardware.
- Interior wood-framed window screens for casement windows.
- Wide wood door and window casings.
- Old-style bathtub and faucets in one bathroom (Facility 323).

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Composition roof shingles (instead of original wood shingles).
- Removal or blocking of transoms over entry doors.
- A/C window units.
- Vinyl floors.
- Modern hardware.
- Modern kitchen and bathroom fixtures.
- Modern kitchen cabinets.
- Louvered doors (one in each house).
- Flush door in kitchen (Facility 322).
- Wood awning over kitchen entry (Facility 323).

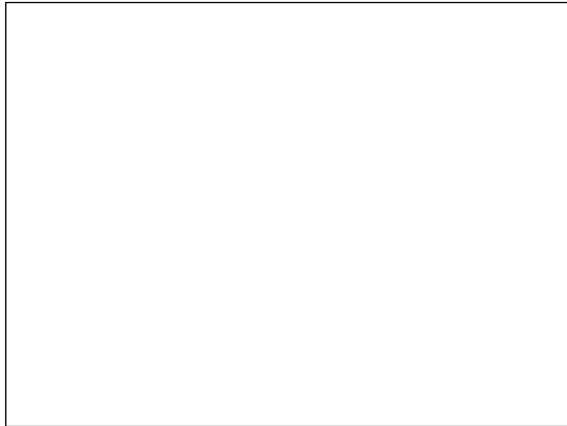


*Facility 324, 1936 Officers' Quarters
Source: Mason Architects, Inc.*

**1936 Officers' Quarters Design
(Facilities 324 to 339, except Facility 330)**

The style of this design is difficult to categorize. Although similar to the 1923 Craftsman/plantation-style houses in the neighborhood, these houses are on concrete slabs only a foot above the surrounding grade, unlike most houses of those styles which are on pier foundations. Also, the L-

shaped plan is uncommon in plantation-style housing. These Officers' Quarters have lower ceilings than most of the earlier houses on the installation. Compared to the other one-story historic houses at Pearl Harbor, the lower ceiling height, in combination with the foundation close to grade, give a more horizontal emphasis to these houses.



Facility 326 floor plan, typical of 1936 Officers' Quarters design

5-78

The 15 Officers' Quarters originally had the same design, although seven have floor plans reversed from the plan shown in the Bureau of Yards and Docks drawing. All were built with three bedrooms, plus the original maid's room (now sometimes used as an office). Probably because this maid's room is so small, it is not consistently counted as a bedroom. Facilities 326, 327, and 328 (Quarters G, H, and I) are listed in the housing database as three-bedroom houses, while the others are listed as four-bedroom houses. Facility 331 (Quarters L), which had a bedroom added, is listed as a four-bedroom, not a five-bedroom, house.

The original plans (as well as some alternative plans that were not built) and a few renovation drawings are in the Pacific Division Naval Facilities Engineering Command Plan Files. Some of the changes to the houses have not been documented

in drawings. For instance, it is not known when the corner lanai on each was enclosed. The original floor to ceiling screening was replaced with casement windows above low board-and-batten walls. Doors with transoms were added to the lanai that are identical to the original living room entry doors. While these are not original features, they either copy original elements in the house or are compatible with the other features of the neighborhood, such as the casement windows used in the 1923 officers' houses.

Not all character-defining features listed below are necessarily in all houses, since only a few interiors were inspected. Probably none of the houses has all of the character-defining features or all of the detracting elements listed below. For instance, the lava rock chimney remains at some houses, but no fireplace was seen in any of the few interiors inspected. Some lava rock fireplaces were noted as extant in a 1987 study of Navy housing (Mariani & Associates). Sometime before 1956, Facility 331 (Quarters L) was enlarged by expanding the living room (which had already been combined with the lanai) and by adding another bedroom and bathroom wing. There are other minor differences among these houses due to renovations and repairs made to each over the decades.

CHARACTER-DEFINING FEATURES OF 1936 OFFICERS' QUARTERS

Exterior Features:

- One-story wood-frame house on concrete slab foundation.
- Board-and-batten siding.
- Shingled multi-hip roof.



Facility 324 interior
Source: Mason Architects, Inc.

- Wide eaves with exposed rafters, clipped at ends.
- Louvered gablet vents in roof.
- Wood screen doors and window screens.
- Wide wood door and window casings.
- Front door (on street side) with multi lights over panel, flanked by abutting 6/6 double-hung windows.
- Living room and lanai entries typically with 10-light double doors with transoms.
- Lanai typically enclosed with paired 10-light casement windows, some with transoms.
- Original 6/6 or 4/4 double-hung windows in most rooms.
- Obscure glass in bottom sash of bathrooms windows (4/4 double-hung).
- Triplet of 4/4 double-hung windows in kitchen.

Interior Features:

- Canec walls and ceilings with battens covering joints.
- Battens on ceiling and wall panels generally aligned.
- Tongue-and-groove walls at laundry room.
- Board-and-batten walls in enclosed lanai (now used as dining room).
- Lava rock fireplaces in some houses.
- Five-panel doors throughout.
- Two-light transoms above doors in bedrooms.
- Swinging door between dining room and kitchen.
- Wide wood doors and casings throughout.
- Period medicine cabinets in some master bedroom bathrooms.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Composition shingles.
- Window A/C units.
- Plywood sheathing in eaves.
- Picture windows.
- Jalousie windows.
- Vinyl tile flooring.
- Modern door hardware.
- New bathroom and kitchen fixtures.
- Fluorescent lighting.
- Alterations to laundry room screened openings.



*Facility 330, Quarters K (Commanding Officer's Quarters on Battery Adair)
Source: Mason Architects, Inc.*

1936 Commanding Officer's Quarters (Facility 330)

This building is significant both architecturally and historically. It is the only quarters built over an abandoned Army gun emplacement; Battery Adair (Facility 446) became the basement of the new Commanding Officer's quarters on Ford Island. The house was built as one of 16 new Officers' Quarters erected during the period of expansion of the Navy's air facilities on Ford Island. Although originally al-

most the same design as the other 1936 Officers' Quarters, there were a few differences, such as the fireplace details. The fireplace has since been removed. This house is much larger than the others in the neighborhood due to the incorporation of an adjacent guest house about 1939. Also, more numerous alterations have been made to this house than to the others 1936 houses, as is typical of Flag Quarters. Again, most of the changes are not documented in drawings.

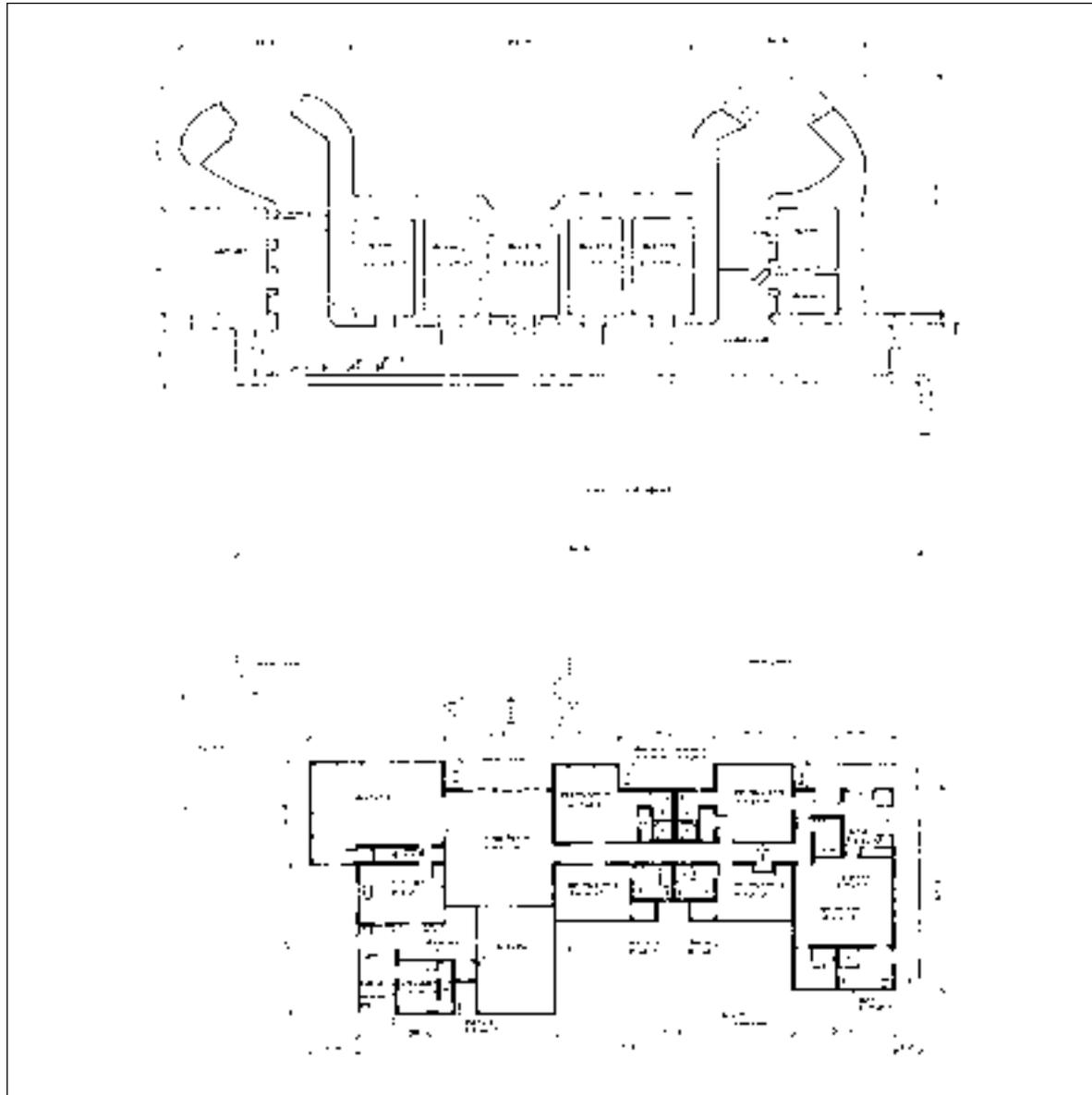
CHARACTER-DEFINING FEATURES OF FACILITY 330

Exterior Features:

- One-story wood-frame house on foundation of Battery Adair, with garage and basement in Battery.
- Lava rock facing on portion of Battery.
- Board-and-batten siding on house.
- Shingled multi-hip roof.
- Wide eaves with tongue-and-groove sheathing.
- Exposed rafters, clipped at ends and covered with fascia.
- Wood screen doors and window screens.
- Wide wood door and window casings.
- Lanai enclosed with paired narrow single-light windows, with transoms.



Original exterior light fixture, Facility 330
Source: Mason Architects, Inc.



Facility 330 floor plans of basement (above) and first floor (below). Note that basement was built in 1918 as Battery Adair.



Facility 330 bedroom
Source: Mason Architects, Inc.

- Original 4/4 double-hung windows in some rooms.
- At least one original exterior light fixture.

Interior Features:

- Five-panel doors throughout.
- Some hardwood flooring.
- Wide wood doors and casings throughout.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Reroofed with composition shingles, without gablet vents.
- Window A/C units.
- Bay window.
- Jalousie windows.
- Vinyl tile flooring.
- Modern door hardware.
- New bathroom and kitchen fixtures.
- Modern light fixtures.

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

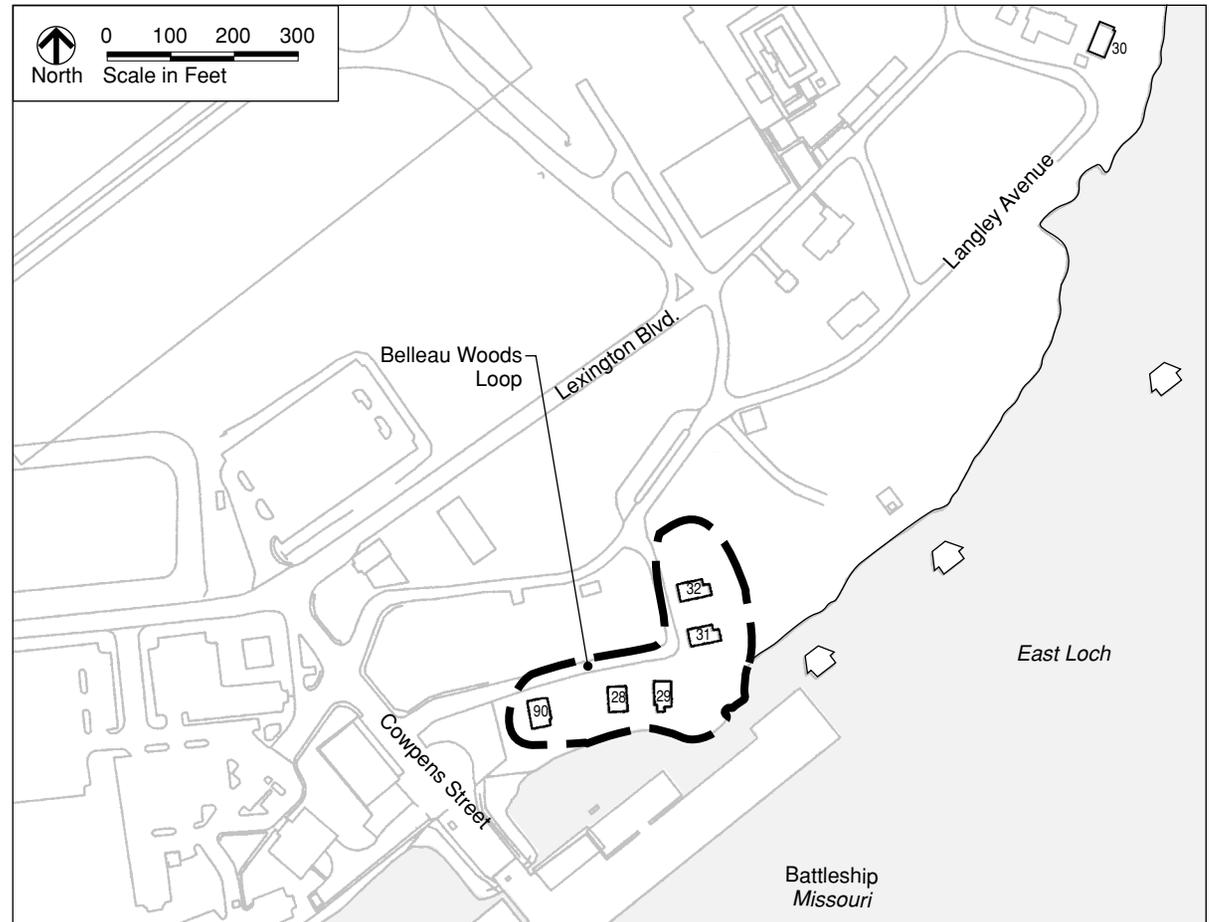
Ford Island-Chief Petty Officers' (CPO) Quarters Neighborhood Significance

This group of small houses is one of the three residential neighborhoods on Ford Island. It includes four 1923 houses (Facilities 28, 29, 31, and 32) and one 1938 house (Facility 90) on Belleau Woods Loop. In addition, Facility 30, now located on Langley Avenue, was built in 1923 on Belleau Woods Loop and is almost identical to the other 1923 houses. Therefore, it is included in the analysis of this CPO Quarters neighborhood. These six CPO houses are significant as the only remaining Navy pre-WWII quarters built for non-commissioned officers. They are unique examples of Navy housing in Hawaii, both architecturally and historically. This neighborhood is associated with the December 7, 1941, attack and its aftermath because of its proximity to Battleship Row.

CPO Quarters Neighborhood History

See the Ford Island-North End neighborhood section for an overview of Navy history on Ford Island. Details of the CPO neighborhood's development history are given below.

There was originally a large separation between the cluster of CPO houses on the eastern shoreline of Ford Island and the three 1923 Officers' Quarters in the Ford Island-North End neighborhood. The construction of additional officer housing in 1936 filled in much of the open space between these two neighborhoods. Originally there were six 1923

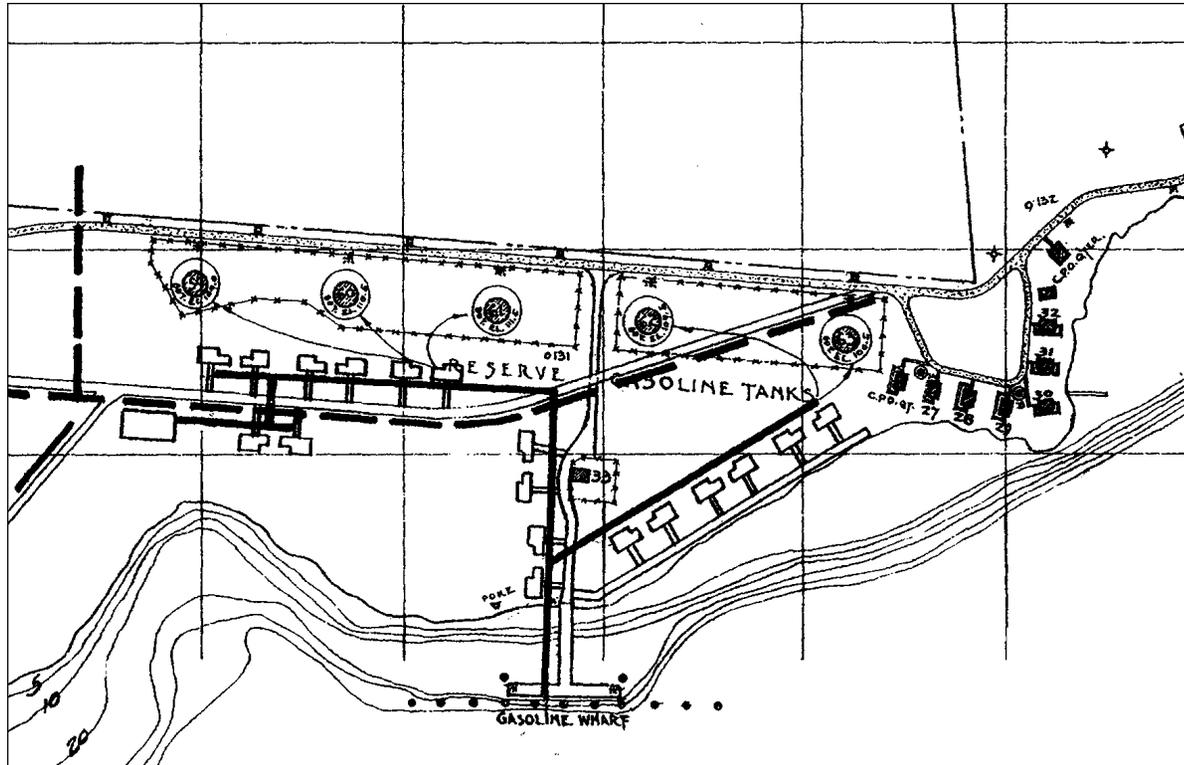


Ford Island CPO Quarters neighborhood

CPO houses facing the street later named Belleau Woods Loop (after a famous World War I battle). The open space enclosed by that street was mostly occupied by a WWII mess hall and galley building and a school from the early 1940s until the 1970s, when the demolition of those buildings

returned the layout of the neighborhood closer to its original pattern.

The general layout of the CPO houses has not changed much over the decades, but historic photos and maps show some variation in the details.



CPO Neighborhood (Existing and Proposed Buildings) on Ford Island, June 1932
Source: Pacific Division Naval Facilities Engineering Command

Around 1932, three additional CPO houses were added to the original six. These are shown as unnumbered but completed buildings on a 1932 map, which also shows 18 proposed houses nearby, presumably also for CPOs. An undated (but probably late 1930s) historic photo shows only eight CPO houses in the group on Belleau Woods Loop. There is a gap suggesting that one of the 1932 CPO houses had been demolished.

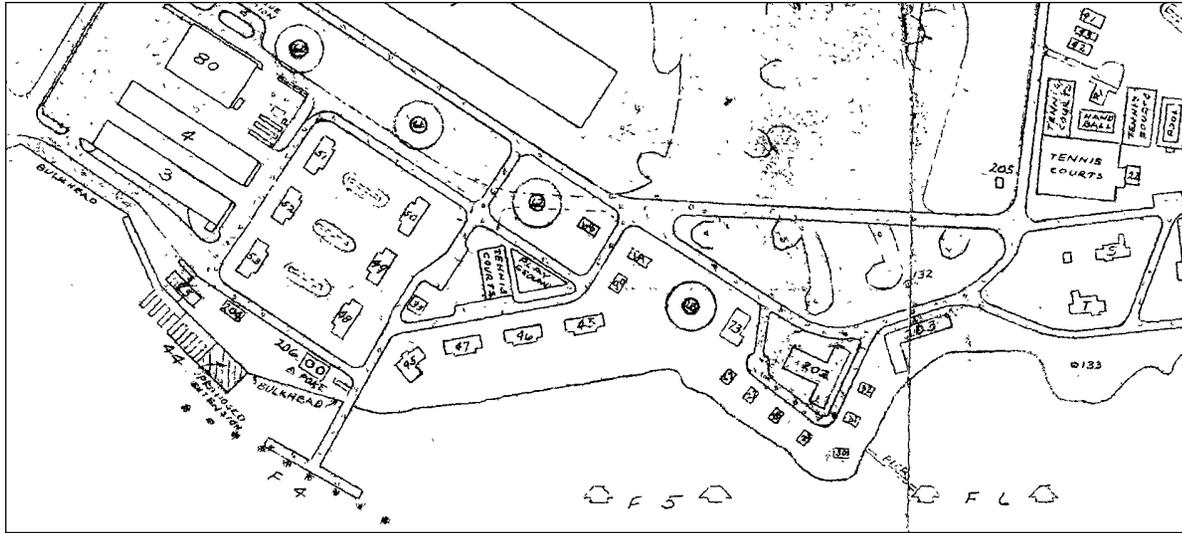
By 1939, nine four-plex buildings for Chief Petty Officers had been built instead of the 18 proposed buildings shown on the 1932 map. These were located largely on fill land, which may be part of the reason the four-plexes were demolished by 1978. Three other CPO houses were built in the 1930s close to the four-plexes, as shown in the 1939 photo. These are identified as Facilities 68, 69, and 90 on the 1942 map of Ford Island.



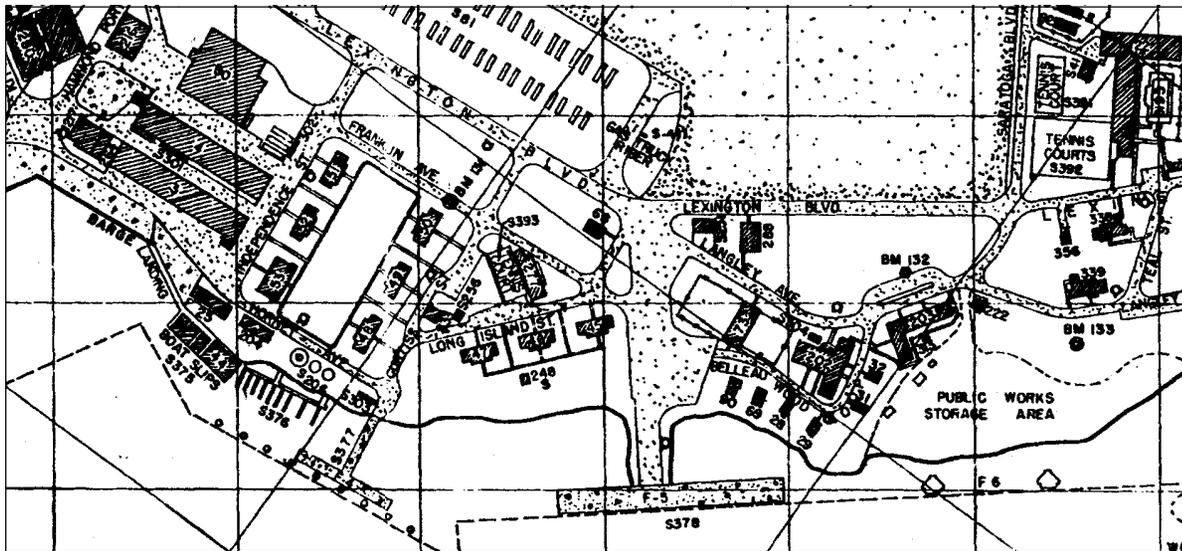
Aerial view of eight CPO Houses on Belleau Woods Loop in late 1930s
Source: National Archives Still Photo Collection, RG 71 CB, Box 102



Aerial view of CPO Four-plex Quarters, June 1939
Source: National Archives Still Photo Collection, RG 80 CF series, Box 151



CPO neighborhood on Naval Air Station Ford Island, June 1942
 Source: Pacific Division Naval Facilities Engineering Command



CPO neighborhood on Naval Air Station Ford Island, June 1953
 Source: Pacific Division Naval Facilities Engineering Command

On December 7, 1941, four battleships, the USS *Maryland*, USS *Oklahoma*, USS *Tennessee*, and USS *West Virginia*, were berthed just offshore of the CPO quarters neighborhood. The USS *Arizona* and USS *Nevada* were moored to the northeast, upwind. Residents of this neighborhood witnessed the damage caused by the Japanese planes and the responses from shipboard and other American guns. The blazing wreck of the USS *Arizona* caused a minor fire in one of the CPO houses on the night of December 7 (Shoemaker 1941: 3). The neighborhood also saw the salvage operations on the USS *Oklahoma*, which involved an elaborate system of winches and cables. These cables were set up adjacent to the CPO neighborhood and efforts to right this battleship stretched through 1943.

The 1953 map of Ford Island shows that Facilities 69 and 90 had been relocated to Belleau Woods Loop, with Facility 69 approximately on the site of a 1923 CPO house (Facility 27), and Facility 90 approximately on the site of a 1932 CPO house (Facility 67). Facility 69 was demolished by 1978. The 1953 map also shows that the shallow inlet on the east side of Belleau Woods Loop had been landfilled by that date. Facility 30, relocated to its present site on Langley Avenue before 1953, was used in the 1965 John Wayne movie *In Harm's Way*. Of all the housing built for Chief Petty Officers on Ford Island, only six remain: one relocated 1938 house (Facility 90), four 1923 houses on Belleau Woods Loop (Facilities 28, 29, 31, and 32), and the relocated 1923 house (Facility 30).

5-85

Major Landscape Features of Neighborhood

The quarters in the Chief Petty Officers' housing neighborhood have no significant foundation plantings, probably since the houses are no longer in use. They do, however, have many large canopy trees. Directly fronting the neighborhood is a large open space bound by Langley Avenue and Belleau Woods Loop, and beyond is another open area along Lexington Boulevard. These spaces contain a number of large banyans, monkeypods, earpods, and ironwoods. A few smaller trees along the edge of the neighborhood consist of African tulip, *milo*, and *kiawe*. The *milo* and *kiawe*, located more along the water's edge form a large screening element. Due to the location and size of these screening trees, the only real view is along the northern corner of the neighborhood back towards the USS *Arizona* Memorial.

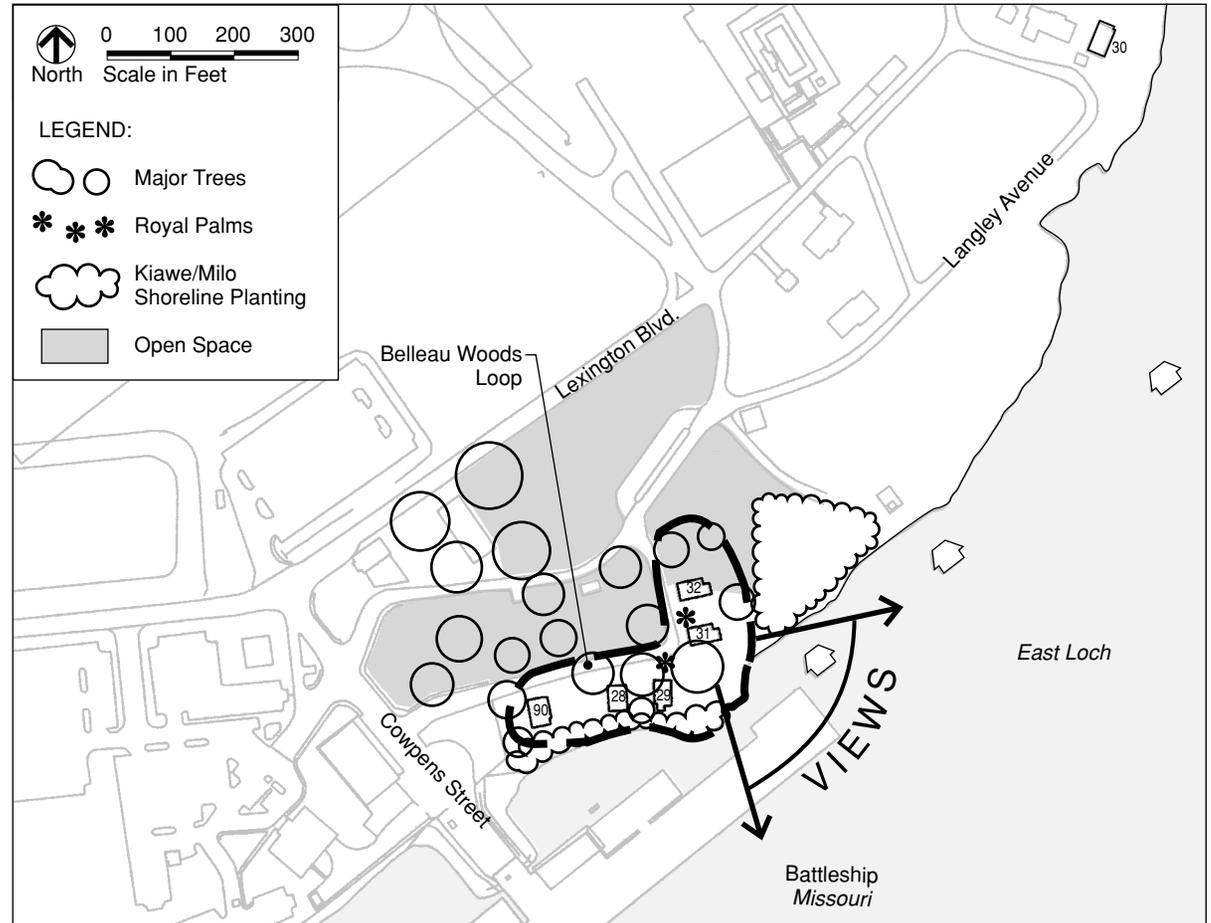
5-86

Major Trees/Palms

- Monkeypods
- Banyan
- Earpod
- Royal palm

Other Trees

- African tulip
- Plumeria
- Brassaia



Landscape at the Chief Petty Officers' Housing neighborhood

Chief Petty Officers' Housing Designs

This historic housing area is very small, consisting of only five houses on Belleau Woods Loop, plus Facility 30, now located on Langley Avenue. As mentioned above, Facility 30 is discussed here because it is similar to the CPO quarters and not like the officers' quarters in its current North End neighborhood. The five houses built in 1923 were originally identical; only one house, Facility 90, was different because it was built 15 years later. They are all one-story, wooden residences in a plantation housing architectural style. Facility 90 shares many features with the earlier houses in the neighborhood but has a slightly more elaborate architecture. The characteristics of these two designs are analyzed below. Note that the streets which the houses are located on are listed below, but that the Navy housing database simply lists the address as the facility number followed by "Ford Is."

1923 CPO Quarters Design (Facilities 28 through 32)

The style of this design is difficult to categorize, but these five military quarters share many of the characteristic features of plantation-style housing in Hawaii. Both the sugar plantation owners and the Navy were interested in obtaining the most cost-effective housing possible for their employees and for their non-commissioned officers.

No original plans and only limited renovation drawings are in the Pacific Division Naval Facilities Engineering Command Plan Files for these houses. Not all character-defining features listed below are necessarily original features, since we do not have

Facility #	Street Location	Facility or Design Name	Date
28, 29, 31, & 32; 30	All on Belleau Woods Loop; except Fac. 30 on Langley Avenue	1923 CPO Quarters Design	1923
90	Belleau Woods Loop	1938 CPO Quarters	1938



*Facilities 90, 28, 29, 31, 32 right to left, respectively
Source: David Franzen Photography, November 1998*

the original plans or historic interior photos of these houses to verify their original appearance. None of the houses have all of the character-defining features or all the detracting elements listed below. For instance,

the roofs on most of the houses were rebuilt, so they have only a few or none of the original features (clipped rafter ends, fascia, tongue-and-groove sheathing). However, these are obviously original

features and so they are still listed as character-defining features. All five of these houses are slightly different due to renovations over the decades, especially in the manner in which the rear addition on each was built. Another difference is the girt; four of the houses have this feature (Facility 30 does not).

The girt is at window-sill level on Facilities 28 and 29, while it is at mid-window height on Facilities 31 and 32.

Facility 30 has more alterations than the other CPO houses. One of the major changes was the repositioning of all the partition walls on the

bedroom side of the house (compare Facility 30 to Facility 32 floor plan). Many of the changes were probably made after its relocation to increase compatibility with its new neighborhood. For instance, the windows in Facility 30 are mostly paired six-light casements, with some paired two-light casements and a pair of sliding eight-light casements. These are more similar in appearance to the multi-light windows of the 1936 houses in the Ford Island-North End neighborhood that Facility 30 is now located in, compared to the 1/1 double-hung windows originally used in the CPO quarters. In addition, because of the move, Facility 30's foundations are concrete blocks, not poured concrete piers; and there are no screening boards around its foundations.

5-88



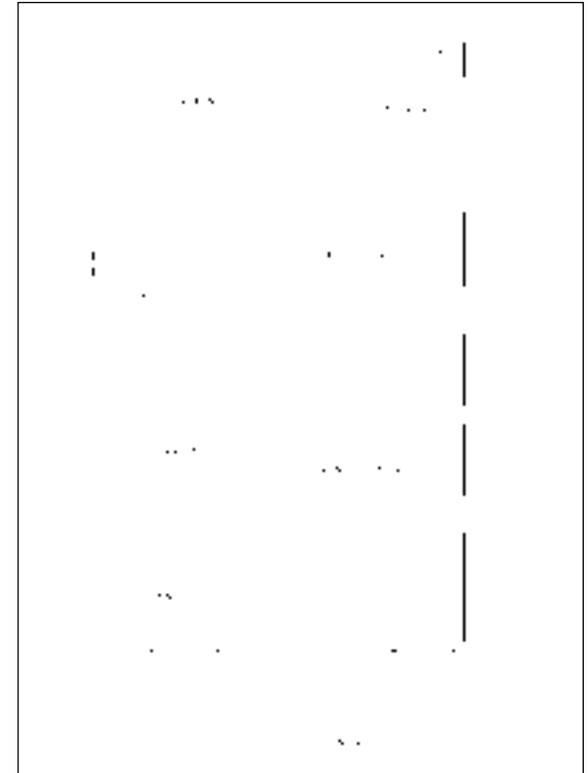
Front view of Facility 28, CPO Quarters
Source: David Franzen Photography, November 1998



Facility 28, view of living room toward entry from the kitchen
Source: David Franzen Photography, November 1998



Facility 30, CPO Quarters
Source: Mason Architects, Inc.



Facility 30 floor plan

5-89

CHARACTER-DEFINING FEATURES OF 1923 CPO QUARTERS

Exterior Features:

- One-story wood-frame house.
- Concrete pier foundations (Facilities 28, 29, and 32 with wood slats between piers).
- Board-and-batten siding.
- Exterior girt (except no girt on Facility 30 and an additional upper girt on rear portion of Facility 28).
- Hip roof with exposed clipped rafters and small fascia.
- Wide eaves with tongue-and-groove sheathing.
- Wood one-over-one double-hung windows (except Facility 30 windows).
- Wood-frame window screens.
- Simple wood door and window casings that project from the walls.
- Main entry door typically with glazing (usually two lights) over one panel.
- Wood screen doors with panel(s) in lower portion.



Facility 30 interior
Source: Mason Architects, Inc.



Facility 31, CPO Quarters
Source: David Franzen Photography, November 1998

Interior Features:

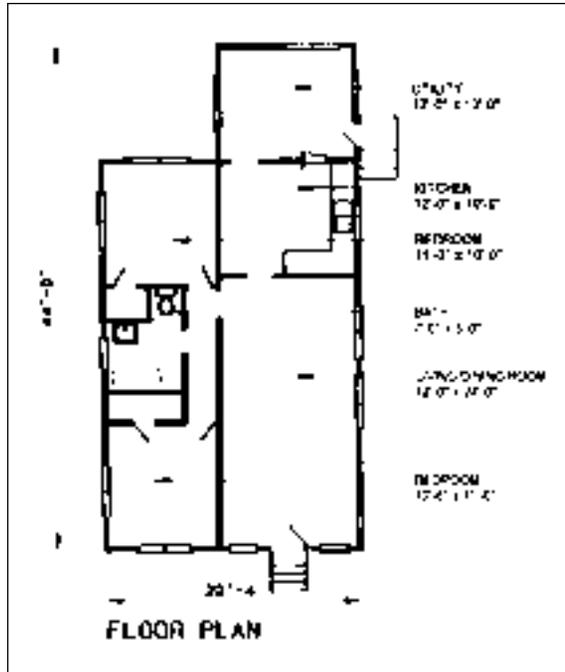
- Moldings at ceiling/wall intersection in bedrooms and living room.
- Ceilings of beveled-edge canec panels throughout (except thin battens over panel joints in Facility 30).
- Most interior walls of similar canec panels.
- Living room with wainscot of V-groove horizontal tongue-and-groove below chair

- rail and canec panels above with thin battens over joints (Facilities 28 and 29).
- Two- or five-panel wood doors with period hardware.
- Some baseboards with molded base cap, all with quarter-round base molding.
- Some period-appropriate incandescent light fixtures.

- Period-appropriate porcelain kitchen sink (Facilities 29, 30, 32).

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Composition roof shingles.
- Plywood eaves sheathing.
- Aluminum gutter and downspout.



Facility 32 floor plan
 Source: Mariani & Associates Architects, 1987:171

- Modern light fixtures, especially exterior.
- Pipe railings on stairs.
- Vinyl tile flooring.
- Most kitchen and bathroom fixtures neither original nor period-appropriate.
- Modern hardware.
- Termite damage.
- Exterior conduits and piping.

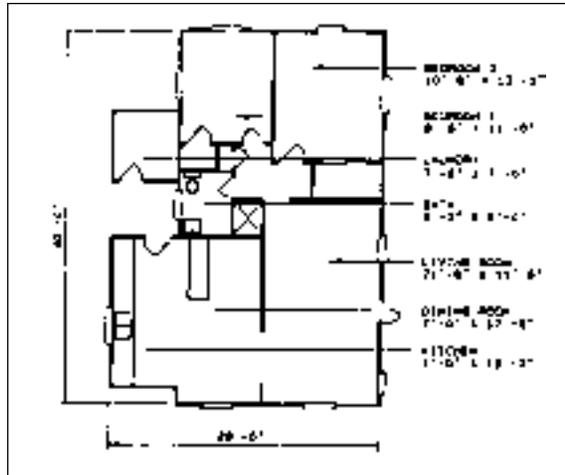


Facility 90, CPO Quarters, entry at street side
 Source: David Franzen Photography, November 1998

1938 CPO Quarters (Facility 90)

This building is significant both architecturally and historically. It is the only extant CPO quarters built during the period of expansion of the Navy's air facilities on Ford Island. In the 1930s,

the name of the installation had changed from Naval Air Station Pearl Harbor to Fleet Air Base Ford Island, which highlighted the new emphasis on aircraft assigned to ships, as opposed to the earlier emphasis on shore-based patrol planes. Architecturally



Facility 90 floor plan

Source: Mariani & Associates Architects, 1987:171



Paired 10-light casement windows, Facility 90

Source: Mason Architects, Inc.



Facility 90, living room and entry from hall to bedrooms and bath

Source: David Franzen Photography, November 1998

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this house is slightly more elaborate than the 1923 CPO houses. As mentioned in the neighborhood history, this house was relocated to this site about 1950. No original drawings for this house were found in the Pacific Division Naval Facilities Engineering Command Plan Files.

CHARACTER-DEFINING FEATURES OF FACILITY 90

Exterior Features:

- One-story wood-frame house.
- Board-and-batten (4-inch-wide) siding.
- Wood shingled hip roof.
- Exposed plumb-cut rafters.
- Wide eaves with tongue-and-groove sheathing.

- Windows mostly paired 10-light casements.
- Kitchen with one-over-one double-hung windows.
- Simple wood door and window casings.
- Paired wood screen doors with panel in lower portion and original hardware.
- Double entry door with multi-light over two-panel leaves.

Interior Features:

- Tongue-and-groove walls and ceilings in bedrooms and hall.
- Canec or plywood walls in other rooms.
- Living room walls with thin battens over vertical joints and chair rail.
- Canec ceilings in living room and kitchen.
- Cove ceiling moldings in some rooms.
- Five-panel wood doors.
- Interior wood-frame screens for casement windows; stiffener aligned with a muntin, rather than mid-height in the middle of a pair of lights.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Foundation piers of concrete masonry units.
- Aluminum gutters and downspout in rear corner.
- Jalousie window in bathroom.
- Modern light fixtures over doors.
- Pipe railing at entry.
- Unmatched pattern of lights in leafs of entry door (see photo at right).
- Blocked-up screening under eaves.
- Vinyl tile floors.
- Flush bathroom door.
- Most door hardware modern.
- Modern fixtures in kitchen and bathroom.



*Unmatched pattern of lights in halves of entry door, Facility 90
Source: Mason Architects, Inc.*

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

Makalapa Neighborhood Significance

The Makalapa neighborhood is significant as an example of military housing built just before and during the early years of WWII, reflecting the build-up of defenses and the related need for housing in the early 1940s. This housing shows the trends toward prefabrication and assembly-line techniques during this period when the need for rapid construction was so urgent. The neighborhood is also significant because it embodies the distinctive characteristics of the period of military construction in the early 1940s. Designed by C.W. Dickey, one of Hawaii's master architects, the homes were among his last works, since he died in April 1942. In addition, the Makalapa neighborhood is a significant and distinguishable entity that relates to the context of pre-World War II military community planning in Hawaii. Furthermore, this neighborhood was home to the top Navy officers who directed the war in the Pacific from December 1941 through August 1945.

Neighborhood History

Overall Navy Housing Construction in Late 1930s and Early 1940s

The U.S. Navy had no separate Atlantic and Pacific Fleets in the early decades of the 20th century. The combined U.S. fleet was transferred in the late 1930s from east coast to west coast ports, especially Long Beach and San Diego. When war broke out in Europe in September 1939, President Roosevelt declared a National Emergency and a massive construction program began at Pearl Harbor

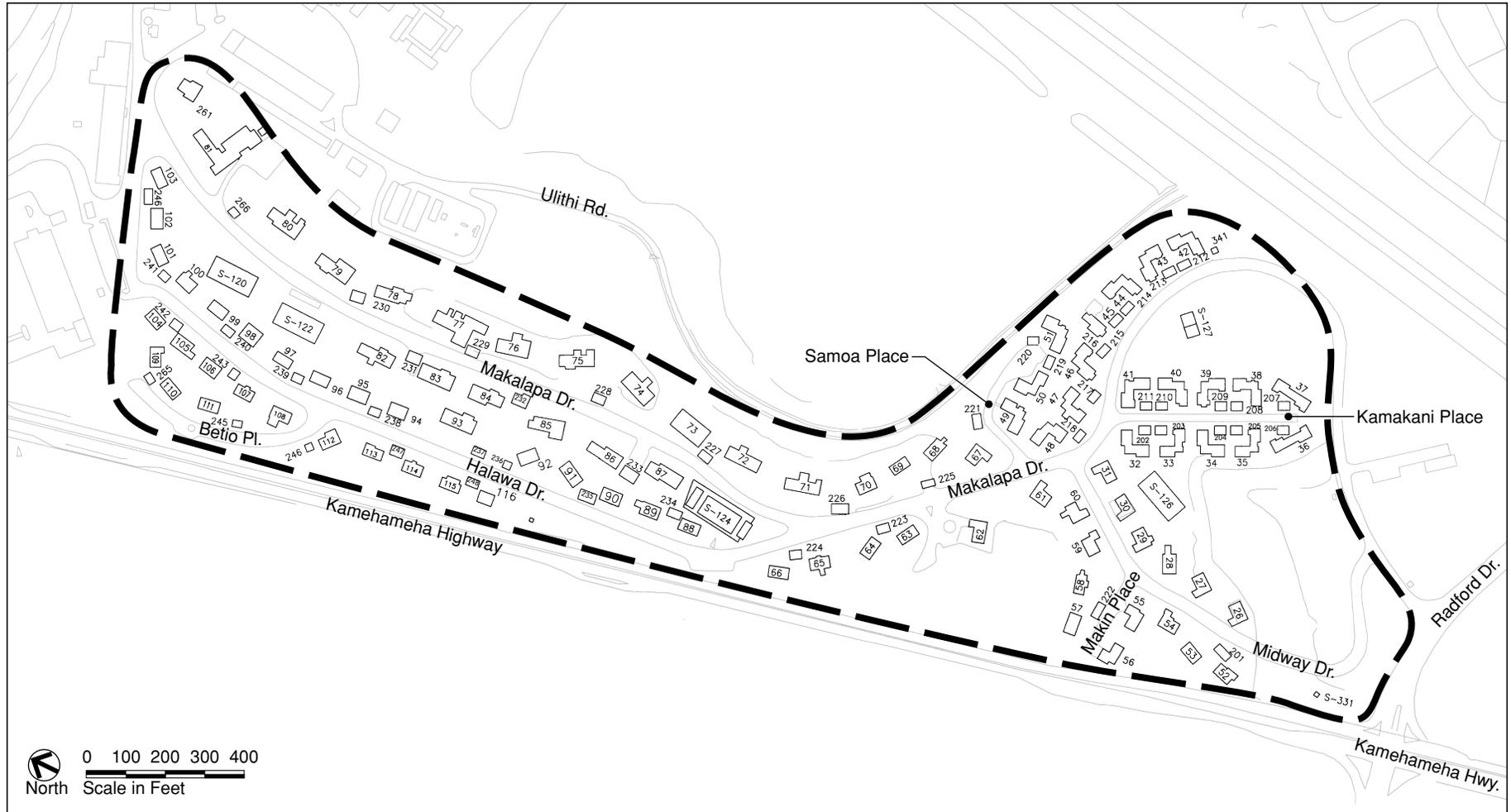


*View down Halawa Drive from pool parking lot, with Facilities 88 and 89 on the right
Source: David Franzen Photography, June 2000*

to support the fleet. In 1939, the fleet began moving to Pearl Harbor, then a relatively small and inadequate base. Intended originally as a temporary relocation to deter Japanese moves in the Dutch East Indies, the move was completed in April 1940. The

Chief of Naval Operations announced in the summer of 1940 that the fleet would remain in Hawaii indefinitely. Thus, there was an urgent need to house fleet officers and their families who would be moving to Hawaii.

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII



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Makalapa neighborhood

The planning for Navy housing at Pearl Harbor moved quickly. A *Honolulu Star-Bulletin* article on October 31, 1939, noted that condemnation proceedings for acquisition of property “on both

sides of the Kamehameha Highway in the Makalapa crater tract” had begun in federal court. The land was owned by the Bernice P. Bishop and Queen Emma estates, and a portion of it was being cultivated

for sugar cane. Except for the military facilities nearby, the rest of the area was very rural. No nearby private sector rental housing was available to accommodate the tremendous military growth. The same



Aerial view of Pearl Harbor on May 12, 1937, showing Makalapa, Kuahua Island, Pearl City Peninsula, and Waipio Peninsula. In the foreground is the lake and sugar cane located within Makalapa Crater.

Source: National Archives—No. 80-G-451160

article noted that a 1938 House subcommittee report had recommended the Navy housing project, at least in part because “a number of enlisted men with their families are now required to live in

Honolulu in unsanitary, dilapidated and unhealthy surroundings.” Over 350 acres were acquired in the Makalapa area, with about 225 acres reserved for the officers’ neighborhood. Almost 600 acres around

Pearl Harbor were developed for Navy housing in the early 1940s.

The contract for the Navy housing and other naval base work was executed on July 1, 1940. Almost all of the Navy’s construction projects in the Pacific during the late 1930s through the early part of World War II were handled by a consortium of firms known as Contractors Pacific Naval Air Bases (CPNAB).

The housing project undertaken by CPNAB for the 14th Naval District originally encompassed the construction of 500 housing units in Housing Area I (later called Hale Moku). The contract was modified to include recreation facilities and housing at Housing Areas II to IV, and at unnumbered areas in Aiea and on the outer side of Makalapa crater. The housing had a total capacity of over 20,000 inhabitants.

The locations for the new housing were the closest available sites not already used or designated for military installations at Pearl Harbor Naval Base or Hickam Air Field. Housing Areas I to IV were located on well-drained land at an average elevation of 30 feet, adjacent to existing Navy lands on the east side of Pearl Harbor. Those sites were intended for enlisted and civilian housing. The Makalapa housing area, being the only elevated land near Pearl Harbor, was chosen for officers’ housing. The Aiea site, where Aloha Stadium is now located, was used for receiving barracks.

The housing areas built in this period continued the tradition of reflecting the rank distinctions that were prevalent in earlier Navy neighborhoods,

but less conspicuously since there was so much standardized material and construction. Civilian housing typically had simpler and smaller designs and the least favorable locations. The top officers' quarters had the best locations and the houses were larger, slightly more elaborate, and more widely spaced. The junior officers' and married enlisted quarters were in the middle of this housing range.

Hale Moku (Housing Area I) was the first to be completed, in June 1941. Dates for the Makalapa neighborhood are uncertain, but construction started before February 1941 and was not completed until after mid-1942. With a highly accelerated schedule, the contractors developed an almost assembly-line process for building the houses. After the land was cleared, often by burning cane fields, the roadways and building sites were graded. Underground utilities were installed next. Concrete foundations for the repetitive residences and barracks were then installed by three crews: one doing the hand excavation, one placing the prefabricated forms, and the third crew pouring the concrete from mixer trucks. Framed structures were almost invariably prefabricated; electrical, mechanical, and specialty crews completed the structures.

The CPNAB report describes how the prefabricated units of walls, floors, and roofs were built in a roofed but wall-less structure "equipped with full-size assembly tables on which necessary horizontal and vertical modules of measurement were indicated, four-way locking devices installed, and saws of various types mounted" (CPNAB n.d.: A-921). The prefabricated units were usually based on rooms, except in cases where a complete wall would



Portion of the Makalapa Housing and Administration Areas, November 1945

Source: Uncertain, but probably from National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection

be too hard to handle, such as the long wall of a living room. These assemblies were then joined by driving spikes instead of bolts, due to the shortage of the latter, considered a critical material.

The window and door frames, cabinets, stairs, and other millwork were delivered to the job from the mill complete with hardware and fittings. Window sash and doors were shipped from the U.S. main-

land. Locally produced canec panels, made from sugar cane, were the typical interior ceiling material. Painting was reduced to a minimum; one spray-coat of paint or oil was put on exposed woodwork.

Effects of December 7, 1941

Two main effects of the December 7th attack on the housing construction at Pearl Harbor were

related to labor and materials. From December 7, 1941, until March 31, 1942, Navy housing projects benefitted from the “influx of 501 Japanese aliens and Americans of Japanese ancestry barred from further employment in the Navy Yard . . . [and from the] authorization of longer working hours” (CPNAB n.d.: A-924). However, there was a temporary setback from the “demoralizing effect on personnel of the unexpected bombing. . . . [F]ear that the attack might be repeated kept the men in a state of nervous tension that temporarily affected progress—as did their assignment to emergency work” (CPNAB n.d.: A-924). This condition was not long-term, but difficulties in receiving timely material shipments continued to impact the job.

Although the attack on Pearl Harbor affected the materials used for construction, it did not affect the progress of the overall Makalapa housing project, which had a relatively high priority. Given the shortage of materials, some construction details were built with materials that could be most readily obtained rather than what the drawings indicated. Also, millwork was minimized in designs after 1942.

C.W. Dickey, Architect

Charles William Dickey was the grandson of William Patterson Alexander, one of the early missionaries to Hawaii. Dickey was born in Oakland, California, but raised on Maui from the age of two until he was sent to Oakland to attend high school. He graduated from the Massachusetts Institute of Technology with an architecture degree in 1894. Dickey practiced in Honolulu with Clinton Briggs Ripley from 1896 to 1900, on his own in 1900,

and with Edgar Allen Poe Newcomb from 1901 to 1905. In 1905, he moved to Oakland and practiced there for the next 20 years, with occasional trips to Hawaii for commissions, mostly for his relatives on Maui.

Dickey established a Honolulu office with Hart Wood in 1919, while maintaining his Oakland office for a few more years. Late in 1924, he moved permanently to Honolulu. His most notable designs date from the late 1920s and early 1930s, when he was instrumental in defining the Hawaiian regional style of architecture. Some of Dickey’s most famous buildings are the Alexander and Baldwin Building (1929), the Halekulani Hotel main building and some of the cottages (1931), several buildings at Kamehameha Schools (1930s), and the Immigration Station administration building (1934). He also designed a few theaters and fire stations, as well as numerous residences. In the late 1930s, Dickey became involved in planning low-cost urban housing projects. In the last years of his life, he was kept busy working on Navy projects and was very active in organizing the Oahu Civil Defense System.

Dickey had always been a versatile designer, not wedded to any one style, even though he is best known for his “Dickey-style” double-pitched hip roof. He was interested in a Hawaiian regional style, but he believed that a wide range of designs could achieve this:

To be in harmony with the spirit of our people, our architecture should be simple, unpretentious and free from all effort or

straining for effect. Any historic style may be modified or used, but after change to fit our conditions it loses its historic characteristics to such an extent that it might be better called Hawaiian (Melichar 1978: 37).

In a 1933 article, Dickey was even more specific about how to design for local conditions:

We have a very temperate climate with an average temperature of 70 to 80 [degrees Fahrenheit] and an average humidity of 40 to 50 [percent] but nevertheless one is uncomfortable unless the air is stirring This demand for air calls for openness in design and cross ventilation. We have a God-given trade wind whose soft balmy caressing breezes blow from the northeast about nine or ten months of the year. For real comfort and happiness this wind must be permitted to enter freely and circulate throughout the house which calls for large openings and comparatively small wall spaces. There are frequent showers accompanying the trade winds which must be shut out without the necessity of closing windows. This calls for porches, wide projecting eaves, hoods over windows or other devices which produce deep shadows and a general effect of coolness and shade (Melichar 1978: 30).

Dickey’s house designs incorporated many of these ideas, including porches, the cross-ventilation of most rooms, and large windows covered by hoods or wide eaves.



Admiral Chester Nimitz pointing at a map of the Pacific in a strategy session on August 10, 1944, with President Franklin D. Roosevelt, General Douglas MacArthur, and Admiral William Leahy
Source: National Archives—No. 80-G-46221

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Admiral Chester W. Nimitz

Rear Admiral Chester W. Nimitz was appointed as the new Commander-in-Chief of the Pacific Fleet on December 16, 1941. President Franklin Delano Roosevelt is reported to have told the Secretary of the Navy: “Tell Nimitz to get the hell out to Pearl and stay there till the war is won” (Layton et al. 1985: 337). Nimitz arrived at Pearl Harbor on Christmas Day, 1941, and proceeded to carry out that order with the help of other senior officers, many of whom also lived in the Makalapa housing area. His official residence from December 1941 to November 1945 was 37 Makalapa Drive (Facility 77).

The home and neighborhood of this military leader who directed the allied armed forces in the Pacific throughout WWII are associated with the most notable achievements of his career. His string of victories started with the Battle of Midway in June 1942 and ended with the surrender of the



Nimitz House (Facility 77) dining room, with factory-finished canec ceiling panels, semi-transparent white stain on plywood walls, and tracks in floor for sliding doors, c. 1944

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection—PHOG No. N. H. 62939 or 62940

Japanese in 1945. Nimitz was one of the signers of the surrender document on September 2, aboard the USS *Missouri*. His headquarters building (Facility 250), located near his Makalapa house, was

declared a National Historic Landmark (NHL) in 1987. The NHL nomination form described Nimitz’s background and the battles he directed during WWII. His home and neighborhood were

noted as important places of relaxation during this critical period; Nimitz enjoyed walking, target practice, games of tennis and horseshoes, and gardening. His home was also where he “entertained guests and dignitaries, ranging from General MacArthur to Mrs. Franklin D. Roosevelt to the junior officers on his staff” (Verhofstadt 1990). President Roosevelt also lunched at Nimitz’s Makalapa home (Driskell 1983: 207).

The achievements of Nimitz were recognized by the Navy men who served under him with great loyalty, and by those above, who promoted him to Fleet Admiral, the Navy’s highest rank, in 1944. After World War II, Nimitz held the Navy’s top position as Chief of Naval Operations. He retired in 1947 and died in 1966, acknowledged as a national hero.

Major Landscape Features of Neighborhood

The Makalapa historic housing neighborhood is located on the west and south rims of extinct Makalapa Crater, with senior officers’ housing at higher elevations. The curvilinear street layout of the neighborhood is in response to the varying topography of the site. Rock retaining walls create more usable area and add interest to the streetscape.

The “Garden City” planning concepts are more prevalent in the senior officers’ housing area. Front yard spaces are larger and more heavily landscaped. The junior officers’ quarters, situated at lower elevations, are spaced much closer together and many are duplex units, so the density is much higher. To overcome this, the duplex units are located along open spaces.



Landscape at Makalapa neighborhood
Source: Belt Collins

Sidewalks are minimized and cast square stepping stones with grass are often used to soften walkways. Streets are used for walking and promote a less formal suburban neighborhood character.

The neighborhood has no discernible street or theme tree. There are a myriad of large trees such as monkeypod, banyan, *kiawe*, Norfolk Island pine, shower tree, and coconut. Accent trees include the autograph, brassia, and plumeria. The foundation plantings around the buildings, in conjunction with the trees, reflect a tropical plant palette. This is probably the unifying landscape element, rather than a dedicated street tree.

The larger front yards in the senior officers’ housing area are more heavily landscaped with

privacy hedges, while the junior officers’ housing area has a more open feel to the landscape. These areas, especially the dwellings along Midway Drive, feel more connected to open space in the neighborhood. Junior officers are more likely to have small children who can use the open space for recreation.

Recreational facilities in the large grassy areas include play courts and play equipment. The neighborhood also has two tennis courts, a volleyball and basketball court, and a swimming pool complex.

From the higher elevations of the neighborhood, there are good views of the Pearl Harbor shoreline and the Waianae and Koolau Mountain Ranges.

Major Trees/Palms

- Monkeypod

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

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Makalapa neighborhood landscape

- Banyan
- Kiawe
- Norfolk Island pine
- Coconut

Other Trees/Palms

- Plumeria
- Brassia
- Autograph

- Shower tree
- Royal poinciana
- Areca
- Manila

Makalapa Housing Designs

The Makalapa housing units were all constructed in the early 1940s, using plans from the same architecture firm, so there is a uniformity of materials and details. The Navy developed a system to classify each of the houses based mostly on floor plans, referring to each type by the letters A through O. There is more variety than just the 14 types, with three variations on the Type I houses, six variations on the Type J design, and two Type K variations. With those variations, plus considering Type L as a variation of Type M, there are 22 variations in total. These types and variations have been discussed and analyzed in the National Register of Historic Places nomination form (Yoklavich 1996) and in the Historic American Buildings Survey reports (Mason Architects, Inc. 2000) on the Makalapa neighborhood. To analyze character-defining features, the Makalapa residences can be separated into five categories: Senior Officers' Quarters Design, Junior Officers' Single-Family Design, All-Wood Junior Officers' Single-Family Design, Junior Officers' Duplex Design, and one-story houses.

All of the residences in this neighborhood have a few similar characteristics. Some aspects of the Modern Movement are evident in the choice of new materials (such as plywood for interior walls) and the minimal ornamentation. However, the overall appearance of the residences, with hip roofs and double-hung windows, is traditional. The term "minimal traditional" may best describe their architectural style. Although the residences are comfortable in this climate, they are not tropical in appear-

ance. Although these residences are not among Dickey's masterpieces, they do have pleasing proportions and well-designed room arrangements. The designs were simplified to meet the accelerated construction schedule for this much-needed Navy housing. One character-defining feature found on most of houses with wood siding on the second-floor and on the duplexes is a vertical molding, either quarter round or square, at the wall corners. This detail allowed for prefabrication and tilt-up wall erection without the need to exactly match the horizontal alignment of the boards at the corner.

Although all listed with 1941 completion dates, some of the buildings were not finished until 1942. Historic photos indicate that the duplexes were among the last buildings to be erected in

Makalapa. The addresses for the duplex units include the letter A or B.

Except for the three one-story houses, the 88 remaining residential buildings at Makalapa are either two-story boxy volumes, or a combination of one- and two-story sections. The dominant building material is wood. All of the two-story residential buildings have horizontal drop siding on the exterior of the second floor. All 20 duplexes (including Facility 45 which is half of a former duplex) plus 12 single-family houses (including the one-story Facility 261) are built entirely of wood, with wood post on concrete block foundations. However, 59 houses (including the other two one-story houses) have first-floor walls built of concrete masonry bricks (8" x 12" x 4" in size) and concrete

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Facility #	Addresses	Design or Category Name	Date
71-78, 82-87, & 93	25, 27-39 Makalapa Drive & 37 Halawa Drive	Senior Officers' Quarters Design (Types A, C, D, E)	1941
26, 29, 53-54 56-59 63-66, 68, 70, 88-92, 94-116	3, 9, 4, 6 Midway Drive 1, 2, 4 Makin Place & 10 Midway Drive 20, 22, 24, 26, 19, 23 Makalapa Drive 27, 29, 31, 33-36, 38-57 Halawa Drive & 47, 49, 51 Betio Place	Junior Officers' Single-Family Quarters Design (Types B, I, J, K)	1941
27, 28, 30, 31, 52, 55, 60, 61, 62, 67, 69	5, 7, 11, 13 Midway Drive 2 Midway Drive, 8 Makin Place 12 Midway Dr., 14, 18, 17, 21 Makalapa Drive	All-Wood Junior Officers' Single-Family Quarters Design (Types I & J—All-Wood Variations)	1941
32-41, 42-48, 49-51	1-10 (A/B) Kamakani Place 3, 5, 7, 9, 11, 13, 15 (A/B) Makalapa Drive 3, 5, 7, (A/B) Samoa Place	Junior Officers' Duplex Design (Types L, M, N, O)	1941
79, 80, 261	41, 43, 47 Makalapa Drive	One-Story Houses (Types F, G, H)	1941

slab foundations. All of the houses have hip roofs with wide eaves and exposed rafters with tapered ends covered by fascias. The original asbestos-shingle roofing has been replaced by asphalt shingles. Other renovations have been made over the decades, often with major changes to the interiors. Only a few facilities retain all of the listed interior character-defining features. There may be other interior features in addition to those listed, since only one to three examples of each category were inspected for this study.

**Senior Officers' Quarters Design
(Facilities 71–78, 82–87, & 93)**

The 15 houses in this category have a complex plan with a combination of one- and two-story sections. Except for Facility 93, which has a reversed plan, all of these houses were originally almost identical. Facilities 93, 83, and 84 have slightly smaller kitchens than the others. The footprint and other features of each senior officer's house now vary due to different additions and renovations. Thus, not

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*Nimitz House (Facility 77) with open trellised patio, c. 1944
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photograph Collection—PHOG No. N.H. 62938*



*Front view of Nimitz House (Facility 77) with entry and water feature beyond
Source: David Franzen Photography, May 2000*

all of the listed character-defining features or detracting elements are found in each house.

Left of or behind the front entry hall in the original design are two bedrooms, two bathrooms, a dressing room, small closet, and connecting halls. To the right of the entry are the living and dining

rooms, and beyond these spaces are the kitchen, front lanai (now enclosed), service hall, maid's room and bathroom. Covered lanai have been added in the rear or side yard to all of the houses, and most have an enclosed rear porch off the service hall. A stair leads to the second-story that originally had



Nimitz House (Facility 77) living room and enclosed rear lanai, with kitchen door to right
 Source: David Franzen Photography, May 2000

two bedrooms, one bathroom, a study, a stair hall, and a trunk storage room. The trunk room has been converted in each house to an additional bathroom.

The homes of Admirals Kimmel and Nimitz (Facility 77) and Admiral Spruance (Facility 73) were originally just like the other Senior Officers' Quarters. However, these top Flag Quarters have undergone more changes over the years than the other houses. They have less historic integrity but more historic significance than the other quarters, due to their association with these persons significant in our past.

All of the Senior Officers' Quarters, except one, are located along the northern portion of Makalapa Drive. Facility 93 is located on Halawa Drive. Due to the slope of Makalapa crater, eight of the houses are above street level, and seven are sited lower. The houses on the rim of the crater have dramatic views



Front view of Senior Officers' Quarters Type C (Facility 84)
 Source: David Franzen Photography, May 2000

of the Koolau Mountain Range, as well as views of Pearl Harbor and beyond.

CHARACTER-DEFINING FEATURES OF SENIOR OFFICERS' DESIGN

Exterior Features:

- Concrete stair and path to front entry.
- Cast concrete stepping stones, 24-inch-by-24-inch and 30-inch-by-30-inch square.
- Entry slabs with lightly scored grid patterns.
- Complex plan and combination of one- and two-story sections.

- Solid copper flashings, gutters, and downspouts (on a few houses, including Facilities 83 and 93).
- Rock retaining wall along the front yard of houses on the east side of Makalapa Street, usually topped by a hedge.
- Concrete slab foundation.
- First-floor exterior walls (original portions) of concrete brick with a warm buff color.
- Second floor with 6-1/2-inch drop siding and vertical molding at corners.

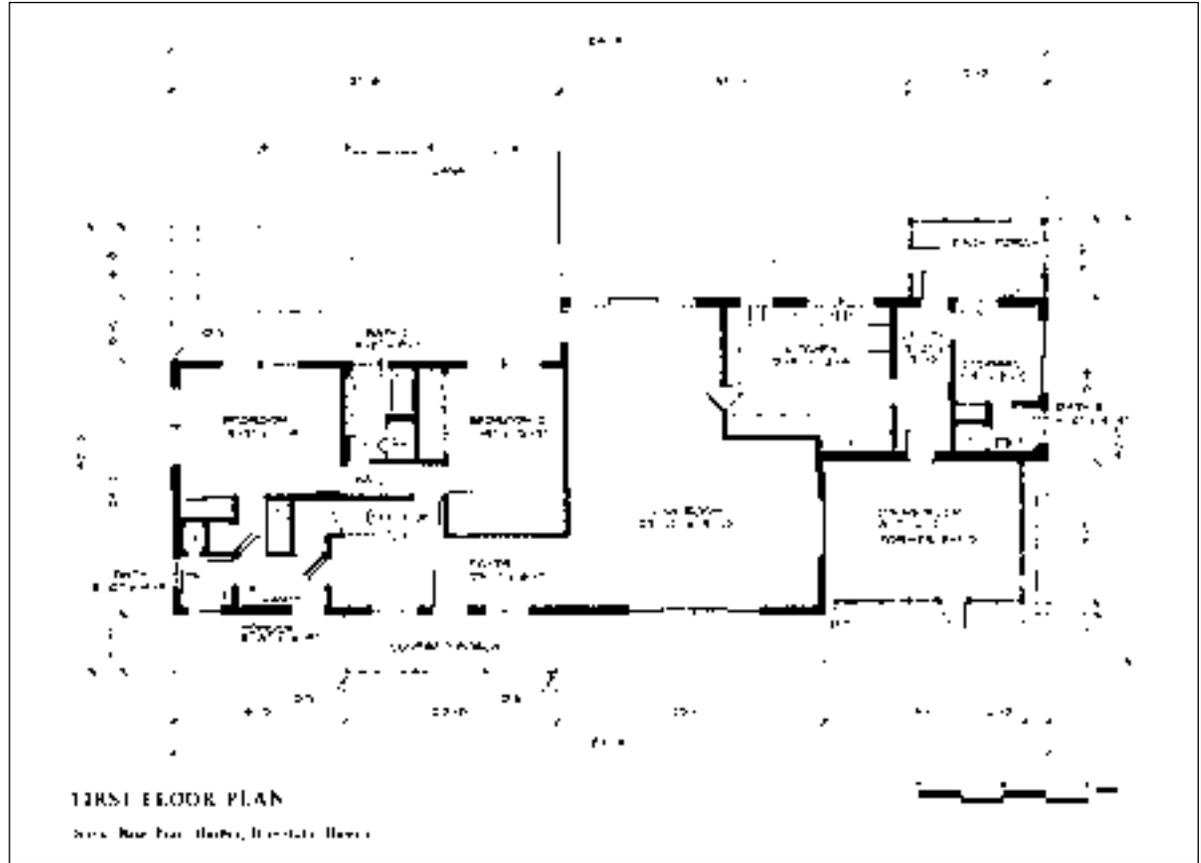


Historic nautical-style metal-cage light fixture typical in neighborhood (this is on Facility 97)

Source: Mason Architects, Inc.

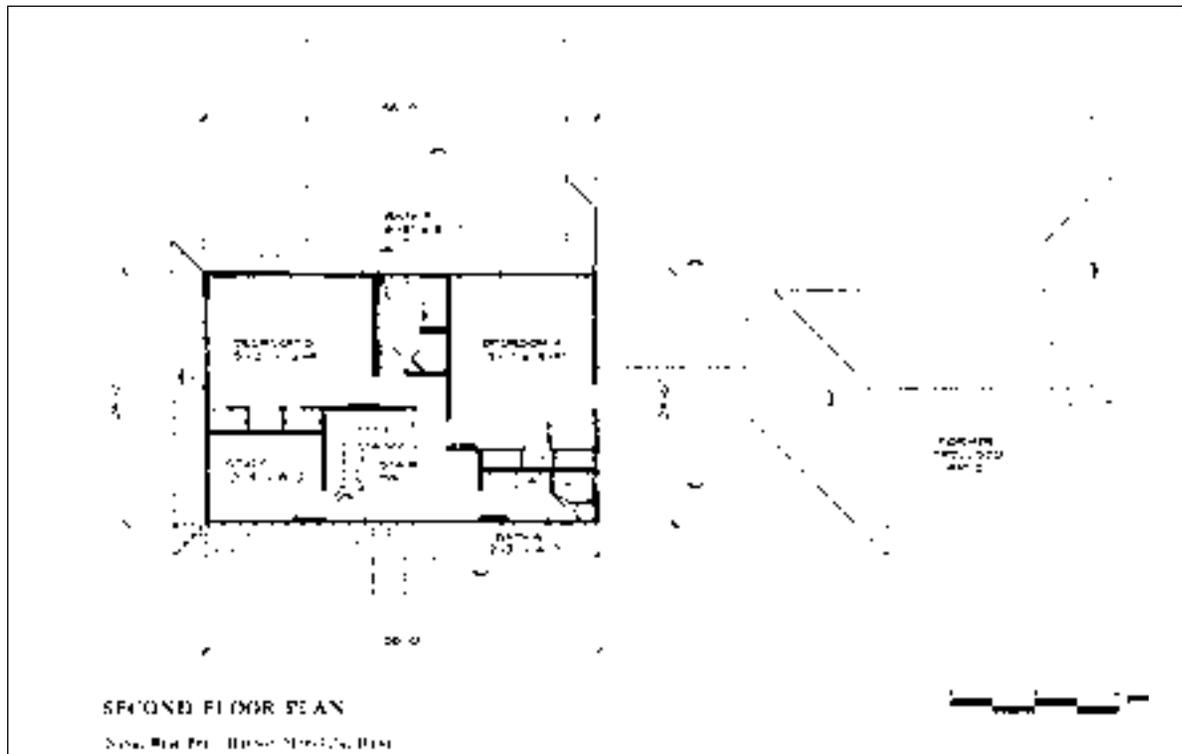
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- Two-level hip roofs with gablet louvered vents on lower portions.
- Nautical-style metal-cage lights with rounded bottom, used for sidewalk and carport lighting.
- Wide eaves with exposed rafters.
- Narrow wood fascia over tapered rafter ends.
- Pent roof between the two stories to shade the first-floor windows.
- Wood posts and grid-like trellis walls of front entry porch.
- Most windows with one-over-one-light double-hung wood sash with spring sash operators.
- Symmetrical fenestration pattern on second-floor front facade, with a pair of double-hung windows flanking four central ones.



Senior Officers' Quarters Type C (Facility 72) first-floor plan

- Original three-light sliding windows in living room and entry.
- One-light and two-light original sliding windows.
- Original one-light hopper windows in bedrooms and bathrooms with finger latches, some with safety chains.
- Wood-frame window screens with narrow half-round screen molding.
- Front entry door with three lights over a single panel, and lever-handled mortised hardware.



Senior Officers' Quarters Type C (Facility 72) second-floor plan

- Wood-frame exterior screen doors with ball-tipped spring hinges, mortised latch set, and safety chain.
- Paired sliding doors between living room and now enclosed front lanai with three lights over one panel, plus flanking matched fixed sections.
- Similar three-light sliding doors and matching fixed sections, but without wood panels, at opening to the rear lanai.

- Groups of circular screened openings between rafters at eaves for attic ventilation.
- Brick “screens” over hopper windows in first-floor dressing room and adjacent bathroom.

Interior Features:

- Plywood panel walls with bevel joints.
- Simple crown and baseboard moldings with quarter-round shoe moldings.
- Plain, wide door and window casings.

- Canec panel ceilings with V-grooves in most living areas.
- Plywood panel ceilings in kitchen, bathrooms, and utility areas.
- All second-story rooms with sloping ceiling sections, reflecting exterior roof form and allowing a higher overall space.
- Interior flush wood doors with plated brushed chrome or bronze doorknobs and hardware.
- Lever-type door handles and mortise locks at main entry.
- Solid bronze hinges at exterior doors, plated steel hinges at other locations
- Flush wood swinging doors with glass insert between dining/living room and kitchen, and between front enclosed lanai and service hall.
- Flush wood door between rear porch and service hall, with an upper screened opening and a concealed vertical sliding glass panel.
- Double 1-inch-thick plywood sliding closet doors with recessed front and side pulls and brass rollers.
- A few houses with clear-varnished tongue-and-groove fir floors on second floor.
- Raised closet floor with clear varnished fir flooring and brass door guides.
- Built-in sloped shoe racks on closet floors.
- Closet space underneath the stair in the dressing room.

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- Built-in vanity table between closets in second-floor bedrooms.
- Switch plates often of brown bakelite.
- Wood window valances.
- Stacked, built-in linen closets in original full bathrooms, with sliding wood doors.
- Interior sliding windows or openings with decorative perforated screens between entry hall and first-floor bedroom #2.
- Interior hopper window with original textured glass between stair hall and bedroom #4 on the second floor.
- Solid rail at stair and second-floor stair hall with clear finish wood cap.
- Large round handrail at stair.
- Wall-to-wall, built-in dresser in dressing room.

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Senior Officers' Quarters Type D (Facility 73)—historic sliding doors and fixed side lights between living room and front lanai (dining room)

Source: Mason Architects, Inc.



Senior Officers' Quarters Type C (Facility 75)—original sliding doors and fixed side lights at opening to rear lanai

Source: Mason Architects, Inc.

- Built-in ironing board in the hall adjacent to servant's room and bath.
- Some original shower stalls with cross-handled shower hardware with faceted escutcheons.
- Access door to storage in attic space of lower roof, from second-floor bedroom.
- Original textured-glass and milk-glass light fixtures.
- Square light fixtures with grid-like grilles in living room ceiling (Facility 77 only).
- Semi-cylindrical wood-capped rail in upstairs stair hall (Facilities 77 and 93).
- Pocket sliding doors between living and dining rooms (Facility 93).
- Shower stall in servant's bathroom with laminate with metal edging (Facility 93).
- Servant call buttons at key locations.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Enclosures of front lanai and rear porches (jalousie windowed enclosures especially detracting).
- Incompatible modern roof on added lanai to the side or rear, typically supported by pipe columns.
- Modern stone-and-epoxy flooring material over concrete at front entry porch and rear terrace.
- Some detracting fencing of rear yards, especially for houses along crater rim.
- Modern doors, such as ones with four-tiered awning windows and those with jalousie sections.
- Windows replaced with jalousies.
- Spray-on textured finish on some ceilings (in Facility 72 and perhaps others).
- Vanity in upstairs bedroom replaced by closet.
- Lightly constructed louvered closet doors (sliding or bi-folding).
- Modern fixtures and appliances in bathrooms and kitchen.
- Incompatible modern light fixtures.
- Metal canopy to front door supported on pipe framing (Facilities 77 and 73).
- Polished terrazzo tiles in the entry/foyer (Facility 77).
- Visible air conditioning units, condensate lines, and electrical boxes surface-mounted on exterior walls.

Junior Officers' Single-Family Quarters Design (Facilities 26, 29, 53, 54, 56–59, 63–66, 68, 70, 88–92, 94–116)

This category includes 42 houses for junior officers with concrete brick walls on the first floor. The houses are varied in plan and massing, depending on the number and location of bedrooms, whether or not a carport is attached, and whether or not the floor plan is reversed. Most of the houses in this category are blocky two-story masses, but 15 have one- and two-story portions. The one-story portions can be wings and/or attached carports. Those houses with complex massing share a few characteristics with the Senior Officers' Quarters that the houses with block massing do not. This distinction between blocky and complex massing is sometimes noted in the lists of features below.

One house (Facility 70) now used as Flag Quarters was first built as a Junior Officers' Single-Family Quarters. It was originally a block-form Type I house; however, a first-floor bedroom wing and an extension of the living/dining room space were added. Because of these additions and alterations, this house has fewer original features than others of this design category. Interior alterations were made in 1999–2001 to most houses in this category. Thus, some of the interior character-defining features listed here may have been removed, especially in the kitchen and former servant's room and bath areas.

CHARACTER-DEFINING FEATURES OF JUNIOR OFFICERS' DESIGN (with 1st-floor concrete brick walls)

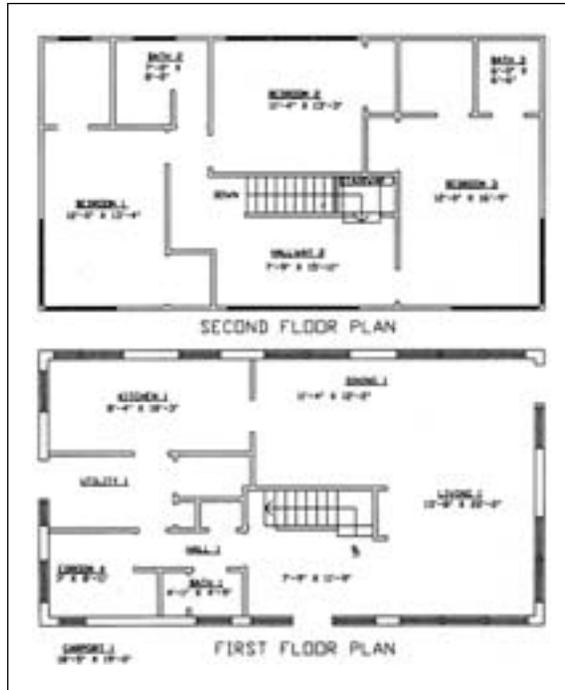
Exterior Features:

- Concrete stair and/or path to front entry.



*Front view of Junior Officers' Single-family Quarters Type I (Facility 92). Note concrete shelf between first and second floors.
Source: David Franzen Photography, April 2000*

- Concrete entry pads with grid scoring.
- Two-story houses (27 with block massing, 15 with one-story sections).
- Attached carport with grid trellis (Facilities 26, 29, 54, 56, and 59 only).
- Concrete slab foundation.
- First-floor exterior walls of concrete brick.
- Second floor with 6-1/2-inch drop siding and vertical moldings at corners.
- Hip roofs with wide eaves.
- Exposed rafters with tapered ends.
- Nautical-style metal-cage light fixtures with rounded bottom.
- Narrow wood fascia.
- Cantilevered concrete shelf over first-floor windows at two-story sections.
- Pipe columns under concrete shelf extension over entry (houses with block massing).
- Double wood posts, and sometimes grid trellis walls, under sloped roof extensions; lower



Junior Officers' Single-family Quarters Type I (Facility 88) floor plans

hip roofs at front or side entry porch (houses with complex massing).

- Most windows with one-over-one-light double-hung wood sash.
- Symmetrical fenestration pattern on the second-floor front or rear facade.
- Original narrow pair of one-light sliding windows high in wall of living room and first-floor bathroom.
- Wood-frame window screens with half-round screen molding.

- Front entry door with two horizontal lights over two vertical panels.
- Rear entry door with one-light-over-one panel (vertical sliding light).
- Wood-frame exterior screen doors with kick board, bronze spring hinges with ball tips, bronze safety chain, narrow half-round screen molding, and bronze or chrome mortised latchset with rectangular back plate.
- Original paired three-light sliding doors to rear lanai.
- Groups of circular screened openings between rafters at eaves for ventilation.

Interior Features:

- Plywood panel walls with bevel joints.
- Planar crown moldings and baseboards with quarter-round shoe moldings.
- Plain, wide door and window casings.
- Canec panel ceilings with bevel cuts in most rooms.
- Plywood panel ceilings in kitchen, bathrooms, and utility areas.
- All second-story rooms with sloping ceiling sections, reflecting exterior roof form and allowing a higher overall space.
- Five-panel wood doors at bedrooms and bathrooms, some with bronze doorknobs and mortised locks.
- One-panel swinging wood doors with glass insert between kitchen and both dining room and utility room.



View from living room of entry and stair, with dining room to left, Quarters Type K (Facility 89)

Source: David Franzen Photography, April 2000

- Multi-panel doors to storage room and water heater closet with screened openings.
- Double flush wood sliding closet doors.
- Raised closet floors with natural varnished tongue-and-groove fir floor and brass glides.
- Stacked, built-in linen closets in upstairs bathroom with sliding wood doors
- Closet space underneath stair at entry and above stair at second-floor hall.
- Horizontally pivoting windows on wall between stair hall and second-floor bedroom.
- Solid rail at stair and second-floor stair hall with clear varnished wood cap.
- Oak stair treads.

- Built-in ironing board in the hall adjacent to servant's room and bath.
- Laminate on kitchen counters and backsplash with metal edging.
- Built-in breakfast nook (table and benches) in corner of kitchen.
- Built-in bookcase above cupboards in living room.
- Solid bronze light switch plates at front and side entries, vertically mounted; with three and two switches respectively.
- Wood window valances.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Ceramic tile over concrete at entry porch.
- Incompatible modern roof on added lanai to the side or rear, especially ones with CMU columns.
- Incompatible modern doors.
- Windows replaced with jalousies.
- Vinyl fencing.
- Incompatible modern light fixtures.
- Incompatible modern fixtures and appliances in bathrooms and kitchen.
- Exposed air conditioning systems, piping, and surface-mounted electrical boxes.

All-Wood Junior Officers' Single-Family Quarters Design (Facilities 27, 28, 30, 31, 52, 55, 60–62, 67, 69)

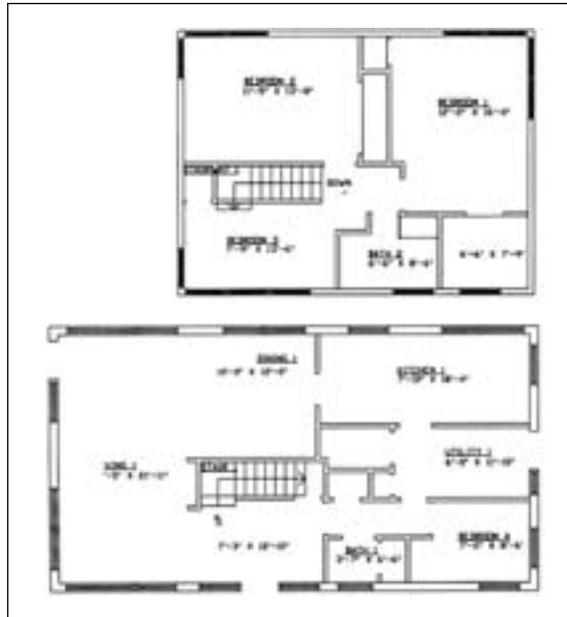
These 11 all-wood houses have floor plans similar to the Junior Officers' Single-Family Quar-



*View of Junior Officers' Single-family Quarters Type J (Facility 67) front entry with walkway in foreground
Source: David Franzen Photography, April 2000*

ters, but do not have first-floor walls of concrete brick. The floor plans vary, depending on the number and location of bedrooms, but all have complex massing with an attached carport and/or a one-story wing. Nine of the houses have attached carports. Because of their steeper sites, Facilities 52 and 69 do not have attached carports; they have large L-shaped lanai that the other homes do not. These 11 houses have the complex massing and other features

in common with the Senior Officers' Quarters, but also have the all-wood siding, foundation screening of alternating thin and wide boards, and other similarities to the Junior Officers' Duplex Design. Some of the all-wood houses have oak floors in the main rooms. One unique feature of the all-wood houses is that the drop siding alignment typically matches all around, so there is no need for the vertical quarter-round or square molding strips used at the corners



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Junior Officers' Single-family Quarters Type J; second-floor (above) and first-floor (below) plans

of most Makalapa houses. This suggests the more experienced carpenters were assigned to the construction of these houses.

The interior character-defining features are assumed to be the same as in the other Junior Officers' Quarters category. No interior of this design was inspected for this study. Interior alterations were made to most Junior Officers' Quarters in 1999–2001. Thus, some of the interior character-defining features listed here may have been removed, especially in the kitchen and former servant's room and bath areas. The character-detracting elements are found on some, but not all, of the houses in this category.

CHARACTER-DEFINING FEATURES OF ALL-WOOD J. O. DESIGN

Exterior Features:

- Concrete path to front entry.
- Concrete carport floor (Facilities 27, 28, 30, 31, 55, 60–62, 67).
- Complex plan and combination of one- and two-story sections.
- Post-on-block foundation with alternating narrow and wide boards screening foundation.
- Alternating narrow and wide boards on L-shaped lanai and exterior stair railings (Facilities 52 and 69).
- First- and second-floor exterior walls with 6-1/2" drop siding, aligning all around.
- Two-level hip roofs.
- Wide eaves with exposed rafters.
- Narrow wood fascia over tapered rafter ends.
- Pent roof between the two stories with paired wood brackets.
- Wood posts and grid-like trellis walls at carport (Facilities 27, 28, 30, 31, 55, 60–62, 67), side entry lanai (all 11 houses), and front lanai (Facilities 27, 28, 31, 55, 60–62, 67).
- Most windows with one-over-one-light double-hung wood sash.
- Paired one-light sliding wood-sash window at side of living room and first-floor bathroom.
- Wood-frame window screens.

- Symmetrical fenestration pattern on second-floor front facade (Facilities 31 and 55) or rear facade (Facilities 27, 28, 30, 52, 60–62, 67, 69).
- Front entry door with two horizontal lights over two vertical panels.
- Wood-frame exterior screen doors with kick board and half-round screen molding..
- Paired three-light sliding doors with mahogany threshold between living room and rear lanai.
- Groups of circular screened openings between rafters for attic ventilation.
- Original exterior hardware (Facility 28).

Interior Features:

- Plywood panel walls with bevel joints.
- Planar crown moldings and baseboards with quarter-round shoe moldings.
- Plain, wide door and window casings.
- Canec panel ceilings in most rooms.
- Plywood panel ceilings in kitchen and bathrooms.
- All second-story rooms with sloping ceiling sections, reflecting exterior roof form and allowing a higher overall space.
- Molded wood window valances.
- Chrome arched handles on kitchen drawers and knobs on cabinets.
- Perforated metal panels under kitchen sinks.
- Bronze or pewter switch plates at doors.

- Five-panel wood doors at bedrooms and bathrooms, some with brass or bronze door-knobs and hardware.
- One-panel wood doors with glass insert between kitchen and both dining room and utility room.
- Multi-panel doors to storage room and water heater closet with screened openings.
- Double flush wood sliding closet doors.
- Stacked, built-in linen closets in upstairs bathroom with sliding wood doors.
- Closet space underneath stair at entry and above stair at second-floor hall.
- Horizontally pivoting windows on wall between stair hall and second-floor bedroom.
- Solid rail at stair and second-floor stair hall with clear finish wood cap.
- Built-in ironing board in the hall adjacent to servant's room and bath.
- Laminate on kitchen counters and backsplash with metal edging.
- Built-in breakfast nook (table and benches) in corner of kitchen.
- Built-in bookcase above cupboards in living room.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Incompatible modern roof on added lanai to the side or rear, especially ones with CMU columns.
- Flush doors and doors with jalousie section.



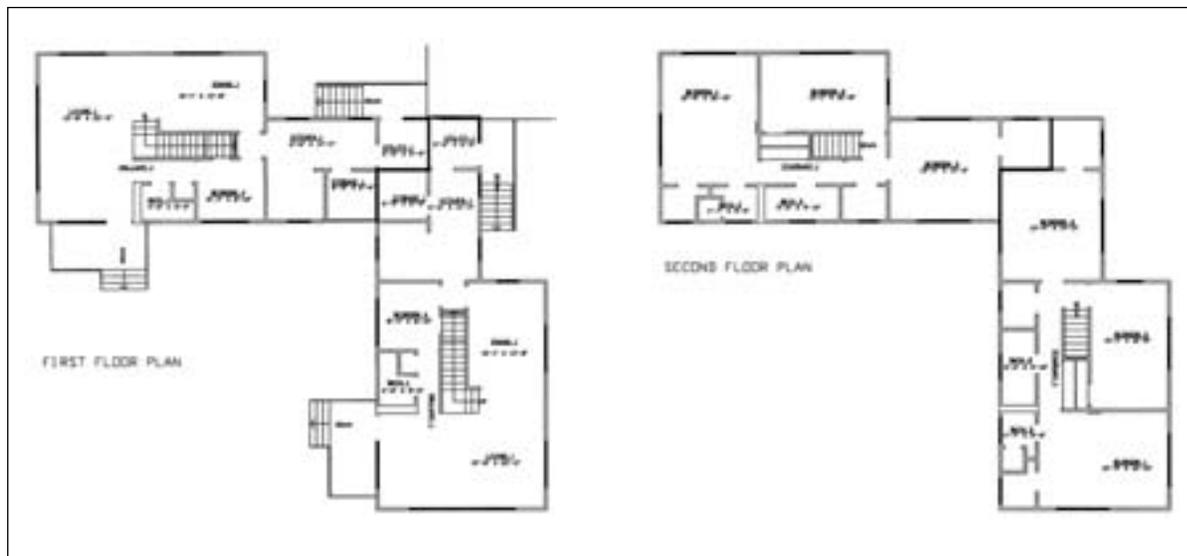
*Front view of Junior Officers' Duplex Type M (Facility 50)
Source: David Franzen Photography, June 2000*

- Windows replaced with jalousies.
- Vinyl and chain-link fencing.
- Incompatible modern light fixtures.
- Incompatible modern fixtures and appliances in bathrooms and kitchen.
- Exterior conduits, utility boxes, and floodlights.
- Trellis grid at carports covered by plywood or new storage closets.
- Holes cut into walls for air-conditioning units (Facility 62).
- Fan replaced window (Facility 67).

Junior Officers' Quarters Duplex Design (Facilities 32–51)

All 19 of the junior officers' duplexes, plus the half-duplex building (Facility 45), are clustered together on Kamakani Place, Samoa Place, and the end of Makalapa Drive. The Navy database divides these two-story buildings into three types (M, N, and O), depending on the floor plan shape and the number of bedrooms. Facility 45 is noted as a different type (L), although it was originally a Type M duplex before a fire destroyed half of the structure. Almost all of the duplexes (Types M and N) are L-shaped, but Facilities 36 and 37 (Type O) are linear. The massing is complex, with projecting porches

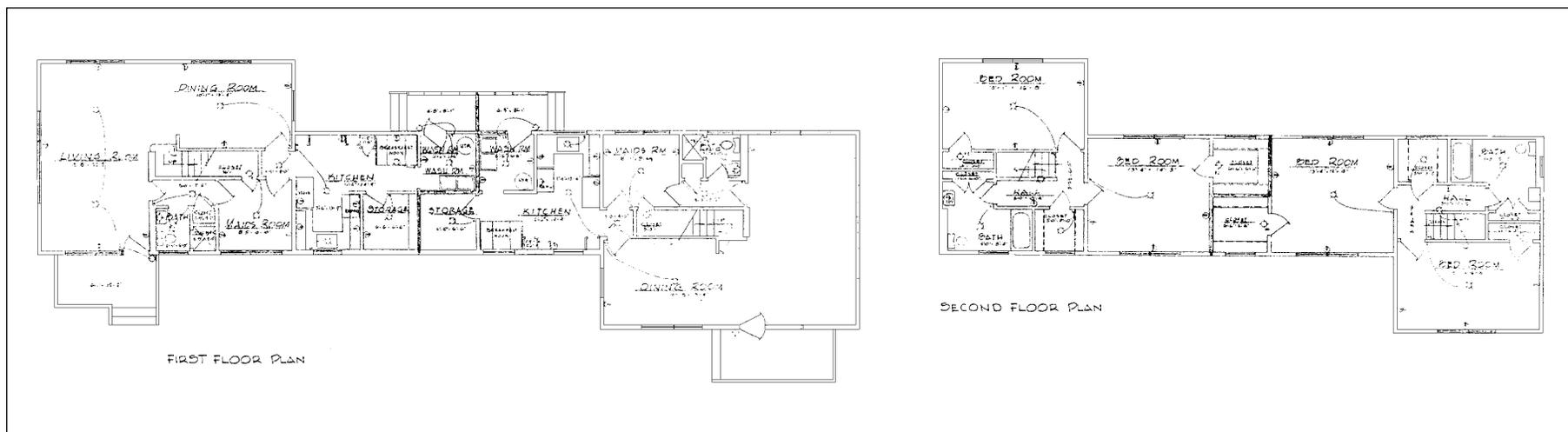
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5-114 Junior Officers' Duplex Type M (Facility 32) floor plans

and wider ends of the duplex. The location of the projecting porches varies according to the topography of each site. The ten Type M duplexes and the half duplex of this type (total of 21 units) have three bedrooms and two bathrooms on the second floor, while the seven Type N and two Type O duplexes (18 units) have only two bedrooms and one bathroom on this floor. In Types N and O, the second-floor footprint is smaller than the first floor's, so the massing and roof forms are more complex than those of Type M. The units in Types M and N duplexes are mirror images of each other, while the Type O units are rotated 180 degrees from each other, and the entry lanai are located differently.

All of the duplex buildings are built with wood siding on both stories, but they differ from the All-Wood Junior Officers' Quarters design. Instead of all drop siding, these duplexes have horizontal



Junior Officers' Duplex Type O (Facilities 36 and 37) floor plans



*View of Junior Officers' Duplex Unit A, Type M (Facility 47) hallway from living room looking toward den, with stair to left
Source: David Franzen Photography, June 2000*

tongue-and-groove redwood boards on the first floor, while the second-story siding is the same drop siding used on all of the second stories in the neighborhood. The secondary roofs that shade the first-floor windows on the duplex buildings are almost horizontal, like the concrete shelves seen in the Junior Officers' Quarters design, but here they are built of wood with standing-seam sheet-metal roofing. Drawings of this element show the original construction of these three-foot-wide roofs as 1/2-inch

waterproof plywood with 1-inch by 2-inch battens "set in white lead" covering the plywood joints. The waterproof material on the plywood obviously needed to be supplemented by the standing seam roofing after a number of years. The way in which the duplex units are joined is clever, with the Z-shaped common walls abutting closets and utility rooms.

In the lists of features below, not all of the character-defining features or detracting elements are found in all the buildings. Specific facility numbers are sometimes given, but others may have been missed since comprehensive surveys were not done of each building. The two units in Facility 44 were revitalized in 1999–2001, so some of the interior character-defining features listed here may have been removed, especially in the kitchen and former servant's room and bath areas.

CHARACTER-DEFINING FEATURES OF DUPLEX DESIGN

Exterior Features:

- Concrete path and/or steps to each unit (many of the steps with pipe railing).
- Two-story buildings (some with one-story wings) in L-shaped plan (except Facilities 36, 37, and 45).
- Post-on-block foundation with alternating narrow and wide boards screening foundation.
- Wood steps to porches with sloping rails.
- Projecting porches with wood posts and slightly sloping roofs.
- Grid trellis(es) and railings on most porches.



*Junior Officers' Duplex Unit A, Type N (Facility 43) kitchen
Source: David Franzen Photography, June 2000*

- Nautical-style metal-cage light fixtures with a rounded bottom.
- Horizontal flush siding on first floor and 6-1/2" drop siding on second floor.
- Vertical moldings at corners.
- Hip roofs, two-level hip roofs on Types N and O duplexes.
- Groups of circular screened openings between rafters at eaves for attic ventilation.

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- Wide eaves with exposed rafters.
- Narrow wood fascia over tapered rafter ends.
- Secondary roof over first-floor windows at two-story sections.
- Secondary roofs on 2-inch-by-8-inch lookout rafters trimmed on the top to provide slope.
- Most windows with one-over-one-light double-hung wood sash and spring sash balance.
- Wood-frame window screens with narrow half-round moldings.
- Narrow, horizontally oriented screened openings high in walls of second-floor walk-in closets.
- Front entry door with two horizontal lights over two vertical panels.
- Single-light over single-panel rear door with vertical sliding window.
- Wood-frame exterior screen doors.

Interior Features:

- Plywood panel walls with bevel joints.
- Planar crown moldings and baseboards with quarter round shoe moldings.
- Plain, wide door and window casings.
- Ceilings with small, bevel-cut canec panels in most rooms originally.
- Plywood panel ceilings in kitchen, bathrooms, and utility areas.
- Mostly one-panel wood doors, some with original hardware.

- One-panel swinging wood door between kitchen and dining room.
- Double flush linen closet doors.
- Less-than-full-height closet in maid's room, due to stair.
- Large walk-in closets, many with wood louvers in opening.
- Half-height bookshelf at foot of stair.
- Clear-finish oak treads on interior stair.
- Second-floor stair hall with solid rail capped by a wood board and attached cylindrical wood piece, both with clear varnish finish.
- Laminate on kitchen counters and backsplash with metal edging.
- Built-in breakfast nook (table and benches) in corner of kitchen.
- Arched kitchen drawer pulls.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Vertical balusters on stair to porch (Facility 44)
- Diagonal lattice instead of (or over) porch grid trellis, porch railing, or horizontal-board foundation screening (especially Facilities 41, 43).
- Plywood partially enclosing porches (Facilities 38, 40).
- Incompatible modern light fixtures.
- Incompatible modern fixtures and appliances in bathrooms and kitchen.
- Vinyl flooring.
- Paint on original clear finish wood handrails.

**One-Story Houses
(Facilities 79, 80, and 261)**

Three buildings in the Makalapa neighborhood were not used as residences during WWII. They are the only one-story houses in the neighborhood. These residences are not analyzed in detail in this study. One house (Facility 261) was originally the Transportation Office, while the other two (Facilities 79 and 80) were originally mess halls. Designed as houses, the mess halls have most of the exterior characteristics of the Senior Officers' Quarters design, except that they lack the second floor. The interiors have been completely remodeled several times, so the houses have fewer interior character-defining features. The character-defining features of Facility 261 are unlike the others in the neighborhood because it was not originally designed as a house. However, it shares the same basic materials and some characteristics of the other residences. One main difference is that it was designed with ventilation louvers below windows which have been infilled. All three buildings contribute to the Makalapa neighborhood.

Facilities 79 and 80 were originally planned as officers' quarters. Admiral Nimitz wrote that he wanted "facilities [to] be provided adjacent to the new proposed Headquarters at Makalapa to berth and mess the personnel of the staffs of the Commander-in-Chief, Pacific Fleet, and Commander Base Force." His January 1942 memo suggested that two of the unfinished four-bedroom officers' quarters be converted to Staff Officers' Messes. Facility 79 became the Staff Officers' Mess and Facility 80 became the mess attached to the Junior Bachelor



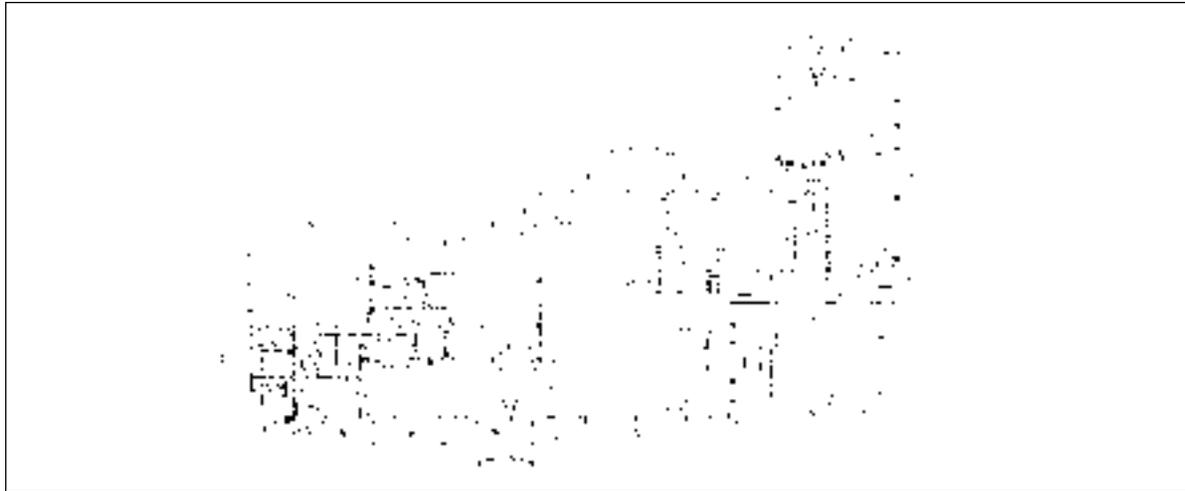
However, only one-story buildings were erected. It seems that the idea to combine berthing and messing facilities was abandoned, so the second-story was not built. By eliminating the first-floor bedrooms, more square footage was available for dining or food preparation. The 1946 drawings, which show the re-conversion of each structure to housing, indicate the construction of almost all new interior partitions, except in the servant's quarters area. During revitalization in 2001, new partitions were installed in Facility 80.

*Front view of Officers' Quarters Type H (Facility 261). (Note: original louvers below windows infilled.)
Source: David Franzen Photography, June 2000*

Officers' Quarters (BOQ) dormitory, constructed about 1943. Nimitz noted that "their construction has not progressed beyond the point where the modifications proposed would involve difficulties." He made specific suggestions to eliminate a bed-

room, bathroom, and passage, but the original intent was to retain three bedrooms in each building for berthing, as well as the mess area. The mention of four-bedroom quarters implies that two-story buildings were originally planned at those addresses.

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Officers' Quarters Type G (Facility 80) floor plan



Officers' Quarters Type G (Facility 80) front entry. (Note: modern light fixtures.)

Source: Mason Architects, Inc.

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Officers' Quarters Type G (Facility 80)

Source: Mason Architects, Inc.

Little Makalapa Neighborhood Significance

The Little Makalapa neighborhood is significant as part of the overall housing expansion that occurred during the build-up of facilities at Pearl Harbor, just prior to and during the early years of WWII. The duplex units in this neighborhood were constructed as housing for some of the civilian contractors employed at Pearl Harbor. The dwellings are significant because they embody the characteristics of a distinctive type, period and method of construction. They were built with prefabricated components and assembly-line building techniques that facilitated the rapid expansion of housing at the Naval Base after 1939. C. W. Dickey, one of Hawaii's well-known architects (see Makalapa section of this chapter for information about Dickey), signed the drawings for these buildings, as well as those for other Navy housing, including the Makalapa and Wahiawa (see section in Chapter 6 on Naval Computer and Telecommunications Area Master Station, Pacific) neighborhoods. Dickey's designs for the Navy were among his last works prior to his death in April 1942.

Neighborhood History

The neighborhood of Little Makalapa was acquired and developed by the Navy in conjunction with the larger Makalapa housing area, in the early 1940s. At the time, Little Makalapa had not yet been physically separated from Makalapa by Radford Drive, although there was a topographic separation due to a natural drainage pattern. The drainage way and distance between the two groups of houses,



*View of Little Makalapa neighborhood from Palmyra Drive
Source: Belt Collins*

as well as the facilities of the Radio Transmitting Station, all effectively divided the two housing areas, although through the 1940s these 15 duplexes were considered part of the Makalapa housing. The development of this housing, as well as other Navy housing in the immediate vicinity, occurred in response to the large population growth that took place at the onset of the war. The rapid expansion of Pearl Harbor had resulted in a lack of adequate housing facilities for both civilian and Navy personnel. (See the Makalapa Neighborhood History, especially the section on "Overall Navy Housing Construction in Late 30s and Early 40s.")

The Little Makalapa housing was completed by Contractors Pacific Naval Air Bases (CPNAB), a large consortium of construction firms. It was just one of the many projects under two CPNAB contracts; these duplexes (as part of the Makalapa neighborhood) came under contract # NOy-4173, as project number 18. This project originally called for the construction of 25 officers' quarters and 30 civilian quarters in the Makalapa tract, but expanded to include many more housing units in the Makalapa neighborhood. The 30 civilian quarters specified in this part of the contract were the 30 units in 15 duplex buildings that were built on Palmyra and

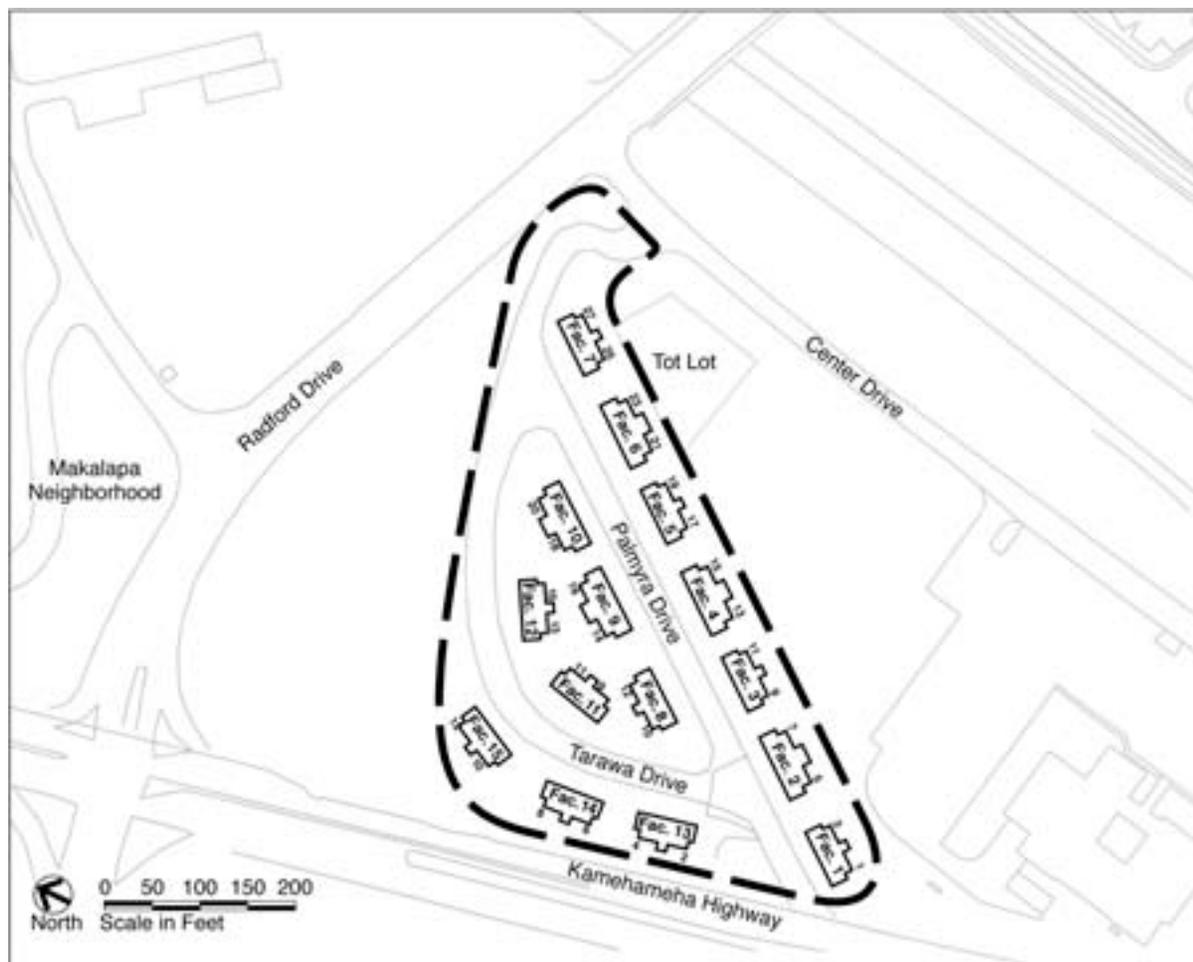
Tarawa Drives, in what would later be the Little Makalapa neighborhood (CPNAB n.d.: A-897).

The original “backwards D-shaped” street layout near the buildings has not changed over the

years, but the pattern of connections to adjoining streets has evolved over the decades. Because Kamehameha Highway was such a busy traffic artery, none of the buildings front on that road, but



Facility 1 near former Kamehameha Highway entrance, ca. 1945
Source: Kidder-Smith Collection, Seabee Museum, Port Hueneme—No. N 193-10



Little Makalapa neighborhood

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Palmyra Street did originally intersect it. An unpaved extension of Palmyra Street also looped back to create a second intersection with Kamehameha Highway. It also was linked to other unpaved roads that originally connected these 15 duplexes with the Makalapa neighborhood to the northwest. In 1946 the dirt road portion of Palmyra was realigned into an S-shaped segment and paved. The new segment of road then aligned with Midway Drive at its Levee Road intersection. That minor intersection was only about 100 feet east of a major intersection of Kamehameha Highway and Levee Road, which led to the East Gate (now Makalapa Gate). At the same time that the Palmyra extension was realigned and a new intersection built, the original entrance to the housing area, at the southeast end of Palmyra Street, was blocked off, and the pavement at the end replaced with plantings. Later, when Kamehameha Highway was widened, the street simply ended in

the lava rock wall that now borders the east side of the highway. When the rail line alongside the duplexes was removed sometime before 1951, a connection was made from this housing area to the road system in the adjacent Bachelor Officers' Quarters area. Sometime after 1960, due to H-1 freeway land acquisition and/or construction and the extension of Center Drive northeast of Kamehameha Highway, this connection became the main entrance into the housing area. The H-1 Highway was completed in the vicinity sometime prior to 1976 (State of Hawaii Department of Transportation 1976). It was probably around this time that Radford Drive was constructed in the dip between Makalapa and Little Makalapa, and extended over the Highway. The S-shaped portion of Palmyra Drive was removed by the 1980s.

The roadway designations, even where the street alignments were not altered, have changed over the years (Fourteenth Naval District 1944, 1946, 1948, 1951, and 1953). The 1944 map shows that Palmyra Street and Tarawa Drive were the original road names. On the 1946 map Palmyra Drive and Tarawa Place were the names used. In 1948, Palmyra Street is used again for the straight portion of the road adjacent to the buildings, but the curving portion is called Palmyra Drive. Maps in the 1950s continue that name distinction between the parts of Palmyra, and both the 1951 and 1953 map call the other road Tarawa Drive. Both roads have been called "Drive" for several decades.

The completion date of these duplexes was sometime before August 1942. An aerial photo taken in February of 1941 shows the roadways in Little



*Oblique aerial view of Makalapa housing area with Little Makalapa in the foreground, May 26, 1944.
Source: Hawaii State Archives, Admiral Furlong Collection—No. 64VF Photo CASU-2*

Makalapa were built with Palmyra Street intersecting Kamehameha Highway at its southern end, and the curved Tarawa Drive meeting Palmyra at both of its ends. Another aerial photo taken just eight months later, in October of 1941, shows all 15 duplex buildings in this area. At this date none of

the junior officers' duplex quarters at the south end of Makalapa neighborhood were built; apparently there was a greater need to house civilians (probably CPNAB contractors) than junior officers at that time. The building envelopes are visible in the October 1941 photo, so it is most likely that the

Little Makalapa duplexes were substantially complete by the time of the December attack. As described in the Makalapa section, prefabricated construction methods were used which involved setting the interior walls in place prior to attaching the prefabricated exterior walls.

Most utilities were non-existent in the Little Makalapa and other housing areas when construction began. Electric power was brought from the Navy Yard. Mutual Telephone Company provided phone service from their Aiea exchange that was initially limited to about 20 subscribers in the six major Navy housing areas. When their telephone exchange in Puuloa was completed and connected to the Kalihi exchange, service was extended to about 200 subscribers. Water was supplied by nearby plantation systems, and later by connections to the 24-inch Navy Yard line from Halawa and/or Aiea pumping stations.

A June 1944 map shows that the Little Makalapa duplexes no longer housed civilians by that date, but were used as officers' quarters (Navy Yard 1944b). The same map indicates that a Honolulu Plantation Company Railroad bordered the east edge of the neighborhood at the time of its completion. The neighborhood is located approximately 500 feet northwest of the common boundary of the Halawa and Moanalua *ahupua'a* (district), in the Halawa *ahupua'a*. This division is also the boundary of the Ewa and Honolulu districts. In the area between the rail line and the *ahupua'a* boundary another Navy complex was constructed between June of 1943 and June of 1944. During WWII it contained three Senior and two Junior Bachelor



Oblique aerial view of Makalapa housing area with Little Makalapa on the far right, 1953.
Source: Helber Hastert & Fee, *Planners* 2002:32

Officers' Quarters (BOQ), a mess hall and galley building, a quarters building for messmen, and other supporting facilities, including a pool and outdoor theater. By 1951, the portion of the rail line that divided Little Makalapa from this complex was removed, and other changes had occurred in the complex. Several buildings in the Junior Officers' Quarters area had been converted for use as the Pearl

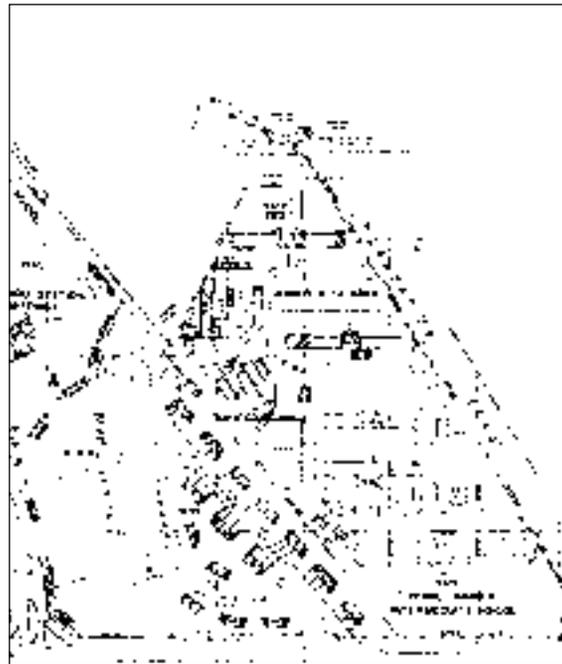
Harbor Intermediate School by 1951. The Junior Officers moved into one of the Senior BOQs and additional buildings were constructed for them as well. Also by 1951, the Little Makalapa housing area had been distinguished from Makalapa, and was referred to as Naval Housing Area IV on Navy drawings, with an area of 8,342 acres (Fourteenth Naval District 1951).

Little Makalapa originally contained two splinter-proof bomb shelters. The larger of the two was erected soon after completion of the neighborhood, as indicated by a 1944 map. This shelter sat adjacent to Facility 12 on Tarawa Place, and was removed sometime after 1972. The smaller shelter was erected slightly later during the war, below Facility 15 on the north side of Tarawa Place. In two late 1940s maps, a Nursery Office is shown adjacent to this smaller shelter, which was still listed as a bomb shelter on a 1953 map (Fourteenth Naval District 1953). This shelter was converted to a lawn mower storage building but was demolished sometime after 1966 (U.S. Navy 1966: 4867).

The Navy BOQ complex to the southeast of Little Makalapa was demolished about 1970 to make way for the H-1 Interstate Highway. This allowed space for an open grassy area between the duplexes and the Highway, where a playground was erected for residents' use.

While many changes occurred within the Little Makalapa housing area over time, very few alterations occurred in the housing units themselves. Structural alterations to the duplexes were minimal, and for the most part confined to the rear of the structures. Navy as-built drawings dated 1958-1960 document these alterations. Most notably, the rear utility areas in Type 7 units were enclosed and enlarged to include a half bathroom. The rear utility areas of the Type 6 units were also altered at this time, although not as significantly; the covered platforms were partially enclosed so that they were open to the outdoors at the top and bottom.

Alterations to the exterior of the homes have also been negligible. According to a circa 1945 photograph of one of the duplexes, the color of the facilities at that time was a very dark color with white or light-toned trim at the second story, and white or light-toned base color with a dark trim on the first story portion (Kidder-Smith Collection, No. N 193-10). This is similar to the original color schemes of the Makalapa duplexes, as well as the NCTAMS two-story duplexes. It is not known when the present color scheme was introduced in the



Little Makalapa Neighborhood (Naval Housing Area IV) in 1951
Source: Fourteenth Naval District 1951

neighborhood, which has the duplexes painted either beige or pale blue with contrasting white trim. Also on the exterior of the facilities, the drawings and the historic photo show there were planting areas originally between the front sidewalks and the buildings' foundations, as well as a curbed planter separating the front entry areas of the two units. These have since been filled in with concrete.

Interior alterations have been mainly limited to changes in materials during renovation projects. These have included new flooring, countertops, and shower enclosures, as well as the modernization of door and window hardware, plumbing fixtures, and kitchen appliances. Kitchen cabinets were also modified to accommodate appliance upgrades, and all their original sliding doors were converted to swinging doors. Available drawings do not indicate the dates that these changes occurred.

The original drawings and the historic photo of one Type 6 building show the second-floor storage room windows had wooden louvers. However, now most of the units have double-hung windows, or in three units a sliding window. The date these louvers were replaced is not known. Both the sliding and double-hung windows are appropriate to the period of the buildings, but were installed without considering the original symmetry of the facade designs.



5-124 *View of Palmyra Drive in Little Makalapa neighborhood showing front yards and mixture of street trees.*
Source: Belt Collins

Major Landscape Features

The Little Makalapa neighborhood is located just south of the larger Makalapa neighborhood and is bordered by Kamehameha Highway and Radford and Center Drives. Kamehameha Highway separates the neighborhood from the Pearl Harbor Naval Complex. Like the larger Makalapa neighborhood, Little Makalapa sits on the south rim of the extinct Makalapa Crater.

The triangular neighborhood appears to have been planned and developed as a result of the existing site conditions, primarily Kamehameha Highway and the elevated topography along the Radford

Drive edge of the site. As a result, the entry into the neighborhood is awkward. The neighborhood itself consists of 15 duplex units with 10 units along the perimeter and 5 units internally, bordered by Tarawa and Palmyra Drives. Because the units are located along the perimeter, the focus of the neighborhood is internal. This inward focus is also reinforced by the large perimeter trees and thick scrub brush that limit any views outward.

Each of the units is setback from the roadway to create a small front yard space. The neighborhood has no prominent street or theme tree; however,

it does have a number of different tree species such as Monkeypod, Banyan, Kiawe, Norfolk Island Pine, Shower Tree and Coconut. There are also a number of smaller accent trees like Plumeria, Kalamona, and Brassia. There is some foundation planting around the units, which reflect a tropical plant palette.

There is really no open space within the neighborhood; however, just outside of the neighborhood's entrance is a large open grass field with a children's tot lot. The limited view from Little Makalapa is of a small portion of the Koolau Mountain Range from Tarawa Drive while heading out of the neighborhood.

Major Trees/Palms

- Monkeypod
- Banyan
- Kiawe
- Norfolk Island Pine
- Coconut

Other Trees/Palms

- Plumeria
- Brassia
- Kalamona
- Shower Tree
- Royal Poinciana
- Areca
- Manila

Little Makalapa Housing Designs

The Little Makalapa housing units are all duplex buildings constructed between 1941 and 1942, and designed by Charles W. Dickey's architecture firm. Two unit types were designed for the neighborhood, a two-bedroom and a three-bedroom unit. Each duplex building contains two units of the same type. There are five buildings with three-bedroom units, and ten buildings with two-bedroom units. These were labeled as Type 3C and Type 2C, respectively, on the original plans. In recent decades the Navy housing office has used the terms "Type 6" for the two-bedroom duplex buildings, and "Type 7" for the three-bedroom duplexes. (Some of the Type 6 buildings have been altered by adding doorways through the party wall at the first and second floors. This alteration yields a four-bedroom home with two kitchen areas, two baths, and two living rooms. These buildings are still referred to by the Navy as "Type 6," however.)

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Landscape at Little Makalapa

The overall appearance of the residences with hip roofs and double-hung windows is traditional, although some aspects of the Modern architectural movement are evident. These features include the choice of materials (such as plywood panels for interior walls, and bathroom and kitchen ceilings), architectural forms (such as nearly flat secondary roofs), and the use of minimal ornamentation. This somewhat hybrid style could be termed "minimal traditional" or "transitional." While they are not considered to be among Dickey's masterpieces, they are the work of a master architect; the duplexes have pleasing proportions and well-designed room arrangements. The residences' large windows, cross-

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Facility #	Addresses	Design or Category Name	Date
1, 3, 5, 7, 8, 11, 12, 13, 14, 15	1-3, 9-11, 17-19, 25-27, 10-12 Palmyra Drive, 9-11, 13-15, 2-4, 6-8, 10-12 Tarawa Drive	Type 6—Civilian Two Bedroom	1941-1942
2, 4, 6, 9, 10	5-7, 13-15, 21-23, 14-16, 18-20 Palmyra Drive	Type 7—Civilian Three Bedroom	1941-1942

have simple designs and minimal ornamentation. This probably reflects design restrictions necessitated by the wartime budget and scheduling demands. The many housing areas and types that Dickey and his firm designed at Pearl Harbor can be seen as part of a hierarchy, where building size and level of detail largely reflect the rank of inhabitants (U.S. Navy, PACNAVFACENGCOM 2003). The simplest housing built in this period were the buildings in the Civilian Housing Area 3 (CHA 3), with the next level being the quarters at Naval Housing Area 1 (later renamed Hale Moku) and Naval Housing Area 2. All three of those housing areas have been demolished. The Little Makalapa and Makalapa duplexes together form the third level of the hierarchy. (Little Makalapa's sliding windows, sliding interior and closet doors, and corner windows are features typically reserved for single-family quarters; these characteristics are not shared with the Makalapa duplexes.) This ranking system would place the Junior Officers' single-family quarters at the fourth level, and the top level of the WWII housing were the Senior Officers' single-family quarters. Since WWII, some of the Senior Officers' Quarters have been designated Flag Quarters, and most of those have subsequently been enlarged. This has added yet another level to the hierarchy.

The 15 duplexes at Little Makalapa are simple two-story box forms with hip roofs. The dominant building material is wood. All the buildings have horizontal drop siding at the first story and vertical tongue-and-groove boards with v-joints at the second story. The buildings are all constructed with concrete slabs on grade and perimeter concrete foundation

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Front View of Little Makalapa Duplex Type 6 (Facility 7)
Source: Mason Architects, Inc.

ventilated rooms, flat secondary roofs over some first-floor windows, and wide sheltering eaves over the second-floor windows provide comfort in the Hawaiian climate, although their design does not reflect a tropical appearance.

Prior to designing the Little Makalapa duplexes, Dickey's firm had produced some simple low-income public housing projects for the City of Honolulu. The designs from his office for the Little Makalapa housing, as well as those for other Navy housing,



Front View of Little Makalapa Duplex Type 7 (Facility 6)
Source: Mason Architects, Inc.

walls. The facades feature a secondary roof with bituminous and gravel roofing at the first story that runs across the front of the building, and that widens at the sides of the structure to form a carport for each unit. Each building has a hipped roof with gablets design, which was originally clad with “green-slate surfaced composition” roofing (CPNAB n.d: A-923). These duplexes were originally almost identical to the two-story duplexes that Dickey designed for the Naval Radio Station in Wahiawa. The main difference was fireplaces were added to the Wahiawa units, due to the cooler climate there.

Differences Between Type 6 and Type 7 Units

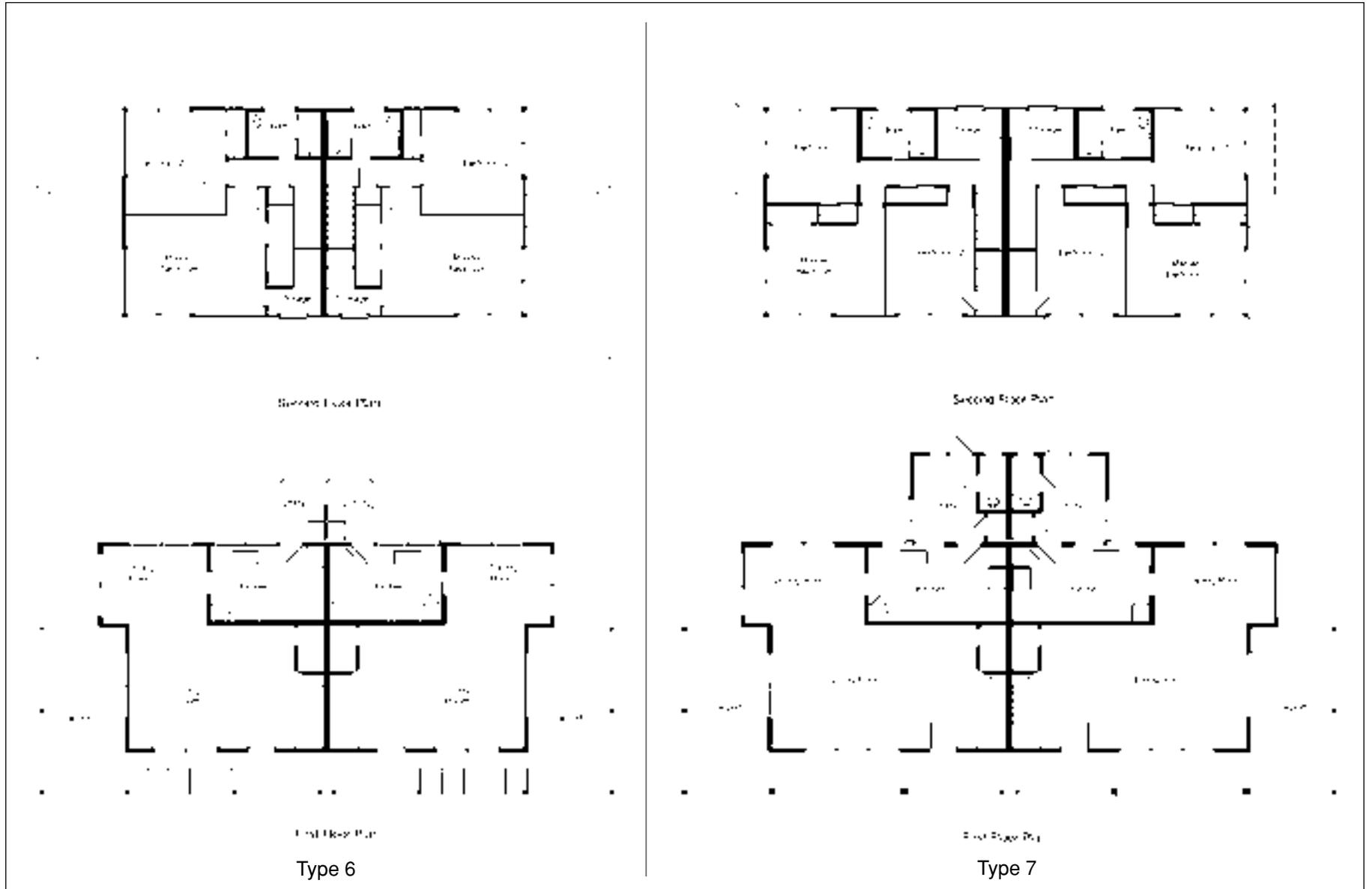
In general, most of the duplexes have had few alterations, and adhere closely to their original design. When changes did occur, they generally took place in all of the duplexes. (One change worth noting here took place in only one unit. In 23 Palmyra Drive [one unit of Facility 6], a built-in wooden china cabinet was constructed in the dining room, sometime before 1958. This alteration is considered as contributing to that unit’s historic character.) While the numbers of bedrooms in the two types differ, their designs are quite similar. Accordingly, their

character-defining features, as well as elements that detract from their historic character, are summarized together in the bullet-list section that follows.

The distinguishable differences between the two-bedroom and three-bedroom types are as follows. The Type 6 two-bedroom duplex units’ front living rooms have paired double-hung windows, while the Type 7 three-bedroom units have three double-hung windows in this location. The second-floor fenestration is slightly different between the types, as well. Buildings with two-bedroom units have two pairs of double-hung windows at a corner of each bedroom, and a single small double-hung window in the storage rooms and bathrooms located near the center of the front and rear facades, respectively. The buildings with three-bedroom units have two pairs of double-hung windows in each corner bedroom, but the extra bedrooms at the fronts of the buildings have a single pair of double-hung windows. The storage rooms and bathrooms, each with a single small double-hung window, are at the rear of the three-bedroom units.

The floor plans of the two building types differ as follows. The three-bedroom (Type 7) buildings have a length of 54 feet, with each living room measuring approximately 23 feet by 14 feet. The two-bedroom (Type 6) buildings are only 45 feet in length, and have smaller living rooms measuring about 19 feet by 14 feet. Each unit in a Type 7 building also has a small utility room addition, containing a half-bath, at the rear of the first floor. On the second floor, the larger Type 7 buildings have the storage rooms at the top of the stairs, next to the bathrooms, as well as three bedrooms. In the smaller Type 6 buildings the storage rooms must be accessed

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Little Makalapa Types 6 and 7 floor plans

via the front bedroom, the single bathroom in each unit is located at the head of the stairs, and there are only two bedrooms in each unit.

CHARACTER DEFINING FEATURES

Exterior Features:

- Two-story symmetrical duplex buildings with rectangular second-floor plan, and more complex first-floor plan due to minor extensions for dining rooms and utility areas, as well as attached carports.
- Two parallel concrete paths to front entry doors, flush with grade (except Facility 1 with central stair to an arched front path.)
- Concrete slab foundation with concrete extended slightly beyond the plane of the siding.
- First-floor exterior walls of horizontal shiplap siding.
- Second-floor exterior walls of vertical tongue-and-groove siding.
- Hip roof with wood louvers in gablet vents.
- Wide eaves with exposed rafters, which are trimmed at ends to dimension of narrow fascia board.
- Screened holes in eaves blocking for attic ventilation.
- Continuous flat roof over front of building and carports on sides, supported by wood posts and beams. Separate flat roofs for dining room and utility area extensions.
- Rafters tapered on the top to provide slight slope to secondary roofs. Wood fascia across rafter ends.



*Historic front door (Facility 13)
Source: Mason Architects, Inc.*

- Most windows paired one-over-one-light double-hung with wood sash (Type 7 units with triplet windows of this type at the front of first floor).
- Long wood-framed sliding windows with paired single lights high on sidewalls of living room/dining room areas.
- Wood-frame window screens with half-round molding.

- Front entry door with one-light over two vertical panels and with mail slot in stile.
- Wood-frame exterior screen doors with single rail.
- Combination (exterior and screen) rear door with upper screen and two panels below.
- Paired sliding doors with three lights over single panel in dining rooms.

Interior features:

- Plywood panel double-wall construction at first story and duplex party wall.
- Vertical tongue-and-groove single-wall construction at second story.
- Simple board moldings with eased edge at ceilings and with quarter-round shoe and/or top at baseboards.
- Boards with eased edges for door casings at first story.
- Quarter-round molding added to doorframes at second story.
- Canec ceiling panels in most rooms, except plywood ceiling panels in kitchen, bathroom and utility areas.
- All second-story rooms with sloping ceiling sections, reflecting exterior roof form and allowing a higher overall space.
- Mostly five-panel wood doors, but single-panel door to stair closet.
- Single-panel sliding wood door with vision light on overhead sliding track mounted on wall between kitchen and dining room.



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Duplex Type 7 (Facility 9) living room
Source: Mason Architects, Inc.

- Single-panel wood doors with either wire mesh or vent holes under kitchen sink.
- Five-panel wood doors with wire mesh vent panel(s) at storage rooms (Type 7 only).
- Paired single-panel sliding wood doors to bedroom closets.
- Stained wood treads and painted risers on stair.
- Stair hall with cylindrical wood handrail on wall and a sloping rail with wood cap.
- Beveled corner on first step of stair.
- Metal edging on laminate counters and backsplash in kitchen.

- Built-in pantry (converted from water heater closet) with four-panel wood door, top and bottom panels of wire mesh.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Modern window, door and cabinet hardware.
- Modern interior light fixtures and exterior floodlights at building corners.



Duplex Type 6 (Facility 11) kitchen
Source: Mason Architects, Inc.

- Fixtures, appliances, and finishes in bathrooms and kitchens when neither original nor period-appropriate.
- Vinyl composition tile flooring.
- At rear utility areas, modern and historic doors with upper jalousie sections.
- Front doors' upper-light replaced with panel.
- Sliding windows replaced with jalousies (only in Facility 12—13 Tarawa unit).
- Openings made to connect duplex units (in Facilities 3 and 5).
- Aluminum thresholds.
- Window air-conditioning units.
- Paint on historic hardware.
- Filling in of planters with concrete.

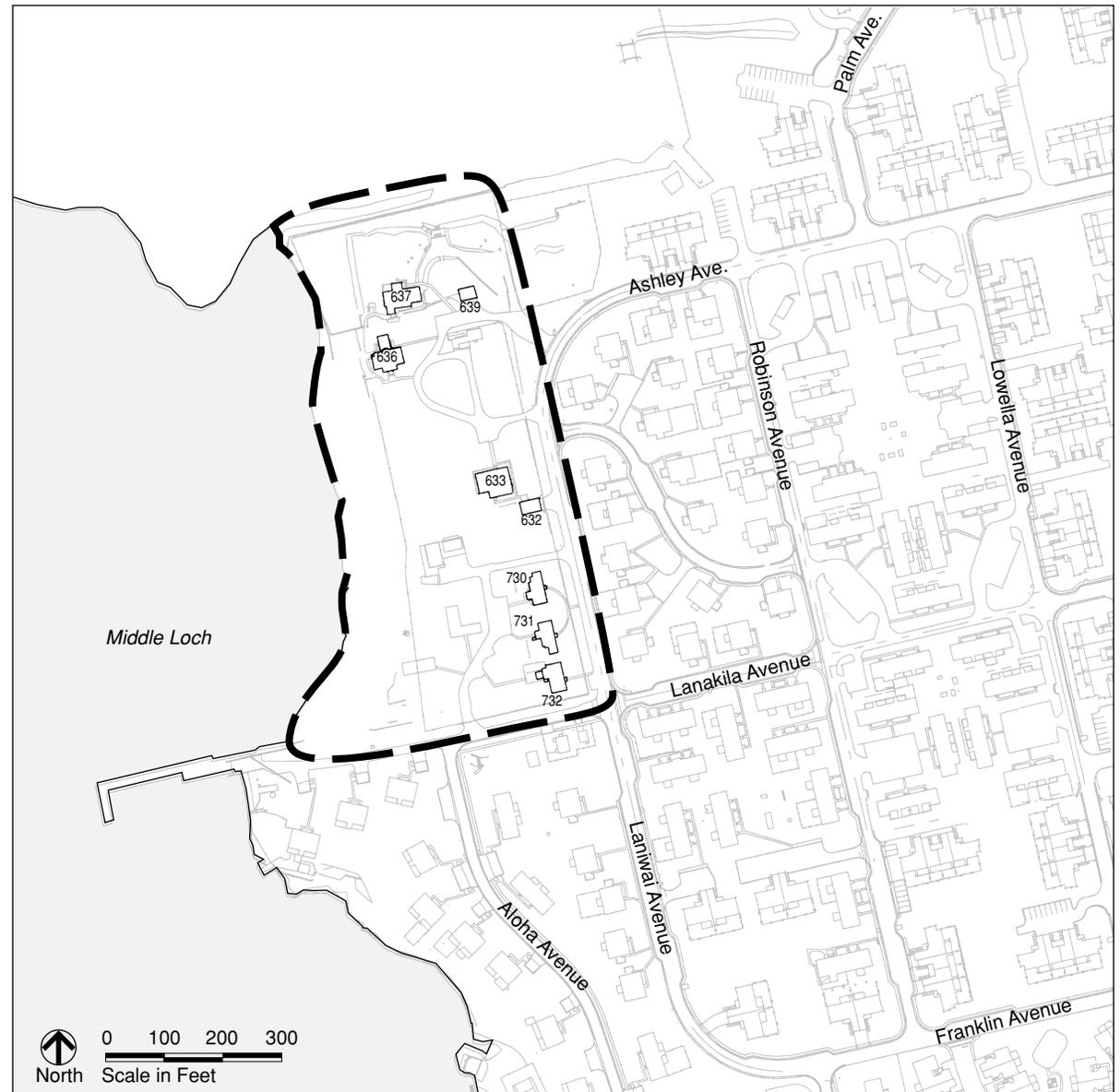
Pearl City Peninsula Historic Neighborhood Significance

Most of Pearl City Peninsula is owned by the Navy and much of the land is occupied by Navy housing. Almost all of the pre-WWII housing was replaced by the Navy in 1952 or 1969. A grouping of six pre-1950 houses, located in one block (bounded by Lanakila Avenue, Lanikai Avenue, Kaiapo Canal, and the Middle Loch shoreline), is considered the Pearl City Peninsula historic neighborhood. Two of these houses are associated with the civilian history of Pearl City Peninsula. The other four are associated with the period of Navy use, which started in WWII, and with the period of Navy acquisition after WWII. This block is significant as the only remaining Navy area with buildings from the pre-WWII civilian history of the peninsula and for its association with Navy history of the peninsula during and after that war. Most of the houses in this block are also significant as unique examples, or the only extant ones, of their architectural style.

Neighborhood History

Civilian Period on Pearl City Peninsula, 1800s–1941

In the 19th century the peninsula between Middle Loch and East Loch had numerous fishponds, some rice fields, pasture land at the tip, and oyster beds offshore (Bishop Museum 1959). In 1890, the peninsula and some of the land north (toward the mountains) became the first planned subdivision outside of urban Honolulu. Development of

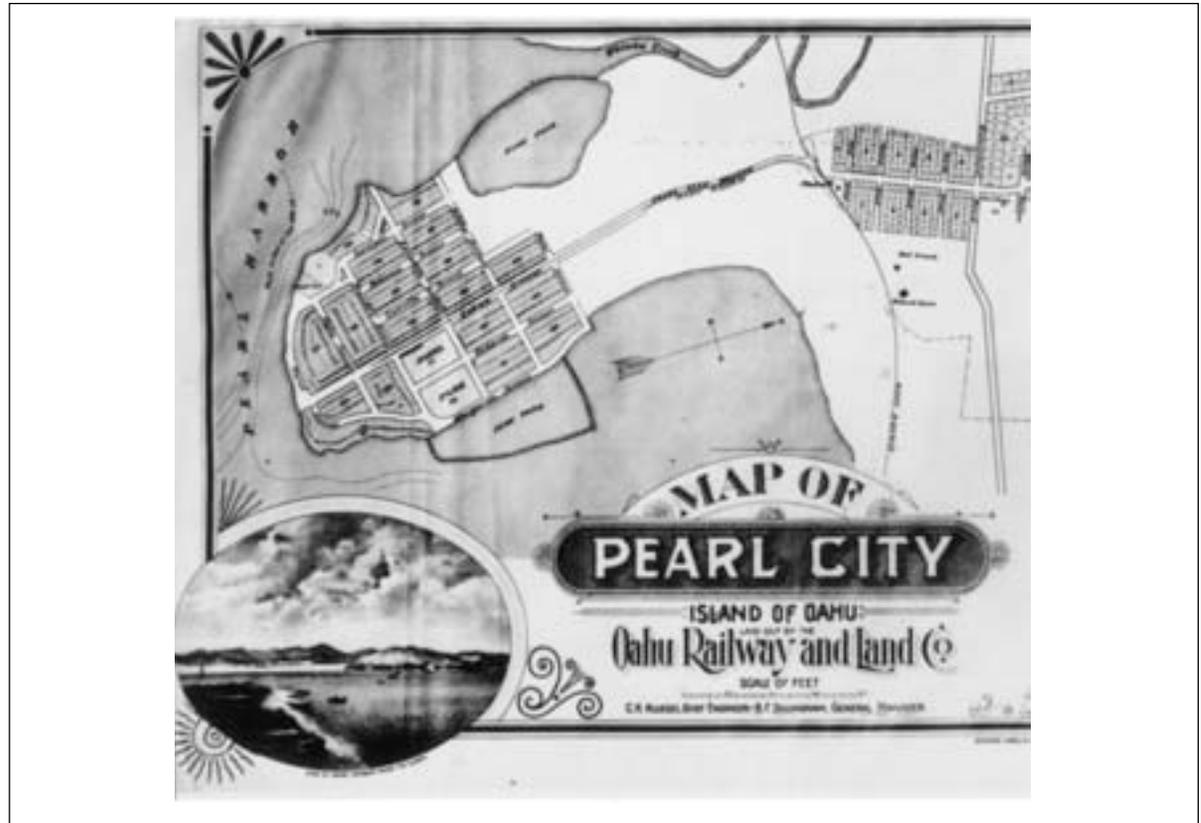


Pearl City Peninsula neighborhood

this suburb was one of the many business enterprises, all inter-related, of Benjamin Franklin Dillingham. In the late 1880s and 1890s, he was involved in a 115,750-acre “Land Colonization Scheme” intended to promote agricultural as well as real-estate development and supported by a railroad planned around most of Oahu (Hawaii State Archives 1887). This subdivision was part of the larger land scheme, the portion located closest to Honolulu along the Oahu Railway and Land Company (OR&L) rail line. The lot sales subsidized the railroad in its early years (Yardley 1981: 160).

As shown in the map to the right, the subdivision originally had two clusters of lots, one grouping north of the rail line and the other group in the south half of the peninsula, which was served by a spur of the main OR&L line running down into the center of the peninsula. By 1892 the suburb had acquired the name “Pearl City” and was described as having about 800 lots, 250 of which were sold and “several elegant modern residences already built” (*Paradise of the Pacific* July 1892: 6). Queen Liliuokalani purchased three of the lots in 1891; these, however, “were among the last sold for a long time” (Yardley 1981: 167) due to economic and political turmoil in Hawaii in the 1890s. There was so little home building on lots on the north side that they were planted in sugarcane while awaiting another building boom. Annexation of the islands by the United States in 1898 spurred commercial and residential growth in Hawaii, particularly on Oahu. However, growth on the peninsula was still slow in the early decades of the 20th century. Pearl City remained a mixed rural and suburban community,

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Map of Pearl City, Hawaii, circa 1890
Source: Bishop Museum, CP# 104,389

despite its name. The first Pearl City school did not open until 1907. By 1922, there was enough population to support a theater.

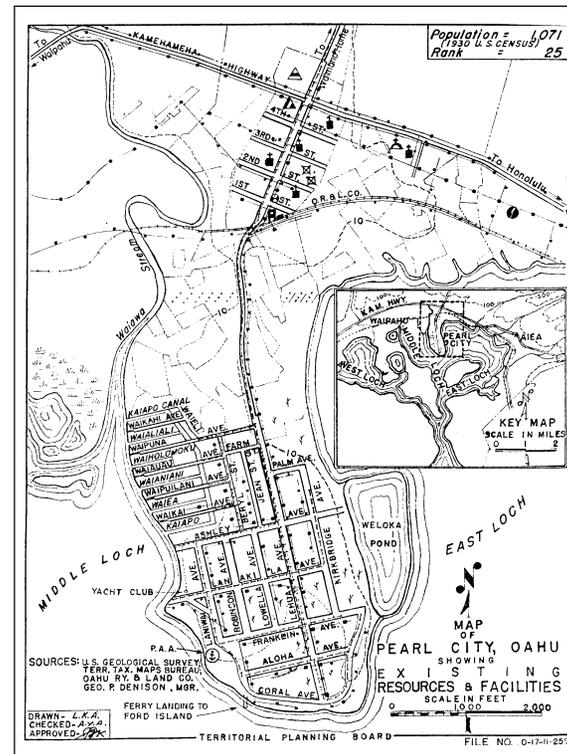
Several different types of families lived at Pearl City in the early 20th century. Some wealthy families purchased more than one waterfront lot and constructed large estates that were mostly used on vacations and weekends or as retirement homes.

Others who built homes on the peninsula commuted to jobs in Honolulu or elsewhere along the rail line from the Pearl City Station. Some local residents had jobs at nearby pineapple or sugar plantations. A number of Pearl City residents built rental units on their lots and supplemented their rental income by doing yard work or other jobs for the wealthy landowners. Often lot owners fished or farmed, both

for their own use and for cash sales. Some families grew taro, rice, and similar crops in the wetland area between the rail line and the subdivided lots (Ellis 1995). Some residents had a business and home on the same parcel.

There were several large fishponds (*loko*) on the peninsula. Homes built by the Waterhouse family and other wealthy owners, such as George Fuller and Dr. Ford, were located next to Loko Weloka on the east side of the peninsula. In 1917, the land grant (6848) to Fred T. P. Waterhouse included this fishpond, under the conditions that no portion of it be filled, and that no piers or other obstructions to navigation, such as floats, be erected or moored. The fishpond on the west side, Loko Paauau, was located just north of the remaining cluster of historic homes on the peninsula. This pond and the land south of it was owned in the early 20th century by J. F. Colburn II, a member of Queen Liliuokalani's cabinet (Hawaii Newspaper Agency). Loko Paauau was not so protected as Loko Weloka. In the early 1930s, it was partially filled and developed by a prominent local physician, Dr. Wah Kai Chang, into the "Venetian Palms" subdivision, with each of the 100 or so lots abutting a canal or Middle Loch (Pearl City Public Library 1992: 39). Because of the depression, few homes were ever developed on the "Venetian Palms" lots; Navy land acquisition maps from the 1940s show only 10 houses in this subdivision. Now there are no houses located north of the Kaiapo Canal, since the Navy moved or demolished the houses and used this area for a dredge disposal area/landfill after WWII. Only the bridges over this canal remain.

After the Navy base was established in 1913, and particularly after the joint Army-Navy airfield was built on Ford Island in the 1920s, Pearl City Peninsula became a popular place for military families. Some Army and Navy personnel, especially non-commissioned officers, lived in the rental units and commuted to Ford Island by small boat or ferry. The location of the ferry landing was near the tip of the peninsula (as shown on the map below).



1939 map of Pearl City

Source: Hawaii, Territorial Planning Board 1939: 370

In 1907, Pearl City Peninsula was the first port of call, and residence for several months, of author Jack London and his wife, Charmain, during their two-year cruise in the *Snark* to the South Seas (London 1922: 34). The *Snark* may have been refitted here before sailing on to the South Pacific. The Londons are just one example of the famous visitors to the peninsula. In 1901 the Hawaii Yacht Club was chartered and built a boat house near the west end of Aloha Avenue, about where the ferry landing was later built. The club later reorganized at the Ala Wai. Many of the wealthy families had yachts or other vessels for recreation, which joined the utilitarian fishing and ferry boats on the waters around the peninsula. By 1924, the Pearl Harbor Yacht Club was established and became known for the many sail boat races it held. The Yacht Club had a wooden L-shaped pier at the end of Lanakila Avenue and a marine railway to pull boats out of the water. The house of Albert F. Afong was "turned into a clubhouse for the Yacht Club" (Ellis 1995: 52). The foundations of this house are still visible behind Facility 731.

Pan American Airways' (PAA) *China Clipper* made several scouting flights between the west coast and Pearl Harbor in the spring and summer of 1935. The PAA seaplanes on these early flights moored at Ford Island. The first airmail flight over the Pacific landed at Pearl Harbor on November 23, 1935, mooring at the new PAA base on Pearl City Peninsula. PAA leased the home of Robert Atkinson, "including approximately two acres, [located] half way between the yacht club and the ferry slip" (*Honolulu Star Bulletin* 1935). The house was used as a

waiting room and as offices for health, immigration, customs, and other government officials. The PAA presence was another confirmation of the importance of Pearl Harbor to trans-Pacific flight, both civilian and military. Besides the early use of Navy facilities, the close cooperation on meteorological and navigational matters between PAA and the Navy was one of the reasons for selecting Pearl Harbor, rather than Kaneohe Bay or some other location on Oahu, for the PAA Hawaii base. In this period of increasing tensions between the U.S. and Japan, PAA was viewed by the Japanese government as a cover for military operations, including air base developments at Midway, Wake, and Guam.

Regular airline passenger service between Manila and San Francisco, via Pearl City Peninsula was inaugurated in October 1936. By this date, the PAA facilities at the peninsula had expanded. In addition to the Atkinson house, which served as the PAA terminal building, additional adjacent land was leased from the Atkinson estate in 1937 (*Honolulu Advertiser* 1937). Passengers generally spent their overnight stay at the Royal Hawaiian Hotel on Waikiki Beach, while the crew stayed at the downtown Alexander Young Hotel (Jackson 1980: 54). The smaller Grove Hotel was located on the peninsula. With all the hotels on Oahu, there was no need for a PAA hotel on Pearl City Peninsula, as there was on Midway, Wake, and Guam.

Military Functions on Pearl City Peninsula before and during WWII

The build-up to WWII started to affect the peninsula residents in 1939 when all the waters of

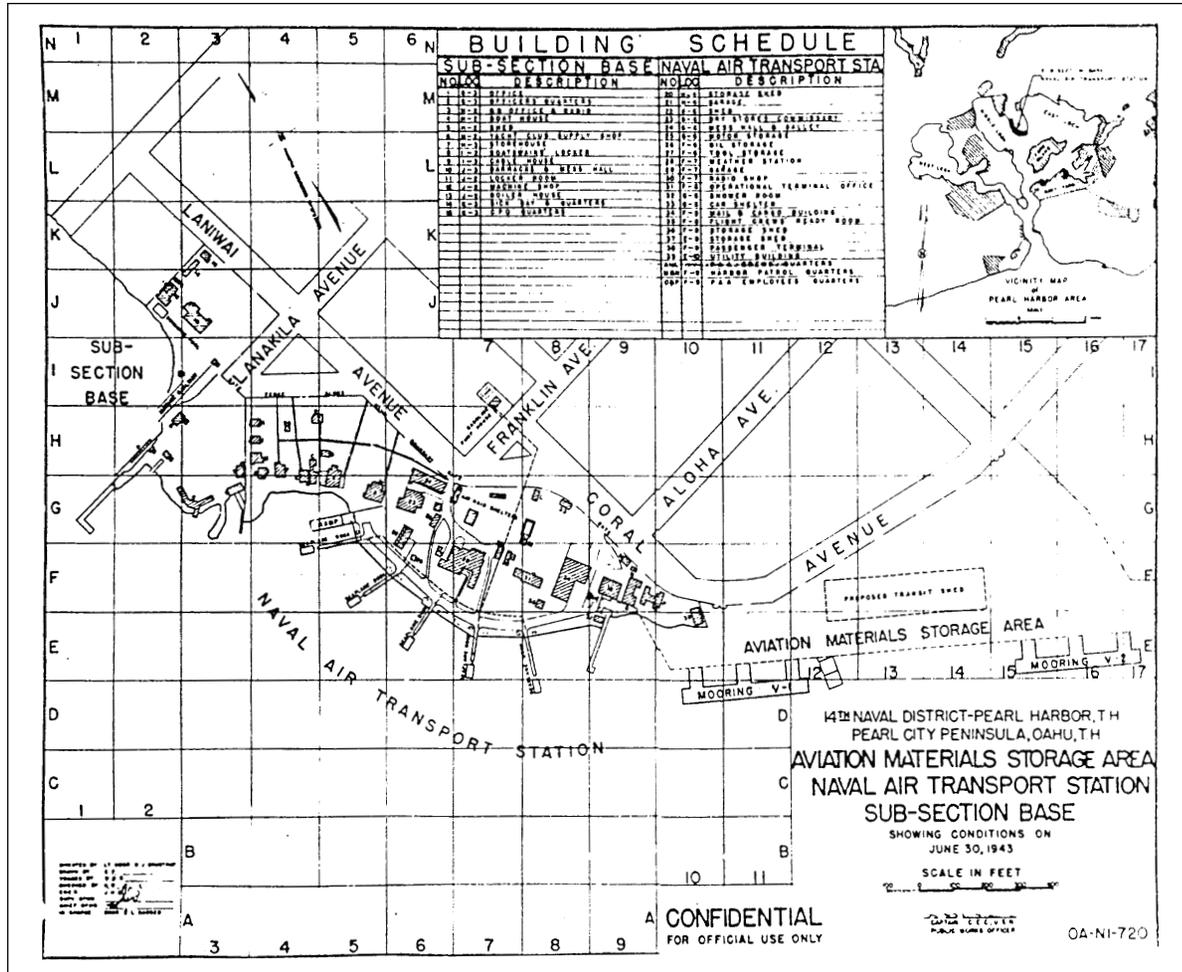
Pearl Harbor were declared a defensive sea area. Vessels owned by Japanese or other foreign nationals were barred, and no aliens were allowed to be on any vessels within Pearl Harbor, based on fears that they were spying for the Japanese government on Navy ship movements in the harbor (Ellis 1995: 94 and McDonald 1939: 22). In 1940 and 1941, the war build-up became more and more obvious, with increasing military personnel and activity throughout the island. Some peninsula residents worked on the numerous building projects at the naval installation (Ellis 1995: 82).

The Japanese attack on December 7, 1941, affected Pearl City Peninsula as well as the military bases around the island. Many residents witnessed the attack, and some were shot at by Japanese planes (Ellis 1995: 74). Shrapnel killed a three-year-old resident of the peninsula, Rowena Foster (Ellis 1995: 70). On the night of December 7, 1941, six planes flying in from the USS *Enterprise* aircraft carrier were shot at. Since communication was poor and tensions were high, the squadron was mistaken for returning Japanese planes. One of these planes crashed on Pearl City Peninsula, burning “Palm Lodge,” a house on Kirkbride Avenue (Lundstrom 1984: 19).

Almost all of the residents fled the peninsula on December 7, 1941, for at least a few days, as the explosions from the burning USS *Arizona* and other ships continued long past the few hours of the attack. Many residents recount watching the attack or its aftermath from the hillside above the peninsula. Residents slept that night at Waimano Home, at institutions in Waipahu, with friends, or in the cane fields (Ellis 1995: 73-75).

Because the military feared sabotage, many Japanese families were evacuated from the area immediately after December 7, 1941. The area around the Waiau power plant was considered particularly sensitive. Dr. Yokichi Uyehara, a Japan-born physician who had a waterfront home on Middle Loch (now Facility 637), was interned in New Mexico. Although most Americans of Japanese ancestry (AJA) in Hawaii were not interned, many were subjected to prejudice, including exclusion from certain Navy work projects and suspicions about their loyalty.

Within a few days of the attack, some lands were immediately turned over to Navy control. Often this was informally done with the agreement of the property owners, before the legal paperwork for license, lease, or purchase was completed. The properties on the south and west shorelines of Pearl City Peninsula were “acquired by declaration of taking (Civil No. 505, Federal District Court) under the First War Powers Act. The date of taking, of record, is 21 Mar 44” (Contractors Pacific Naval Air Bases n.d.: A-846). The Navy actually got use of these lands in late 1941 or early 1942. As seen on the 1943 map above, the former PAA facilities (as well as the PAA planes and some staff) were used by the Naval Air Transport Service (NATS) (Pan American Airways, Inc. 1944: 48 and Jackson 1980: 205). The Contractors Pacific Naval Air Bases (CPNAB) completed several projects on Pearl City Peninsula, including building two warehouses as well as a few other structures, alterations and repairs of the PAA terminal building, renovations and repairs to 14 small beach homes, construction and dredging associated with a seaplane ramp for the NATS and



Portion of Pearl City Peninsula used by Navy for Sub-Section Base, Naval Air Transport Station, and Aviation Materials Storage Areas
 Source: Contractors Pacific Naval Air Bases, n.d.: A-843p

two carrier moorings wharves, and constructing all supporting utilities (CPNAB n.d.: A-845).

Because of the increased ship traffic in Pearl Harbor after 1941, plans were made to move the

seaplanes (U.S. Navy, Bureau of Yards & Docks 1947: Vol. II, 142). The NATS moved to Keehi Lagoon in 1944, and the former PAA-leased lands and facilities were then available for reuse by some

other Navy activity. These were desired by the Commandant of the Navy Yard for use as the Harbor Patrol Base (Furlong 1943) and by the Commandant of the Fourteenth Naval District for use as a Destroyer Base (Ghormley 1944). Admiral Chester Nimitz approved the latter use on September 10, 1944. The Byrne Organization was the construction company that built some new buildings for this base, and relocated and altered other buildings (Byrne Organization 1944).

By 1945, several recreational facilities were located in this part of the peninsula. Some were swimming pools and play courts on the waterfront parcels, which had been built before the war. The former Atkinson House (the PAA terminal building, then NATS weather station) became a recreation building for the Destroyer Base by 1944 (Fourteenth Naval District 1944). Other recreational facilities built by the Navy included an open-air beer garden, tennis and other play courts, and an outdoor theater. Two other officers' recreation buildings were located at the Destroyer Base near the intersection of Coral and Aloha Avenues. These were noted on a 1943 map as PAA employee quarters. The foundations of these remain, with a brick patio on the water. On the 1951 map of the peninsula the patio is noted as having a pavilion and arbor, with a small projecting trapezoidal shape called "the band stand & dance floor." Some of these recreational amenities were probably built in 1945, to entertain the men who were waiting to be discharged from service.

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Oblique aerial view of Pearl City Peninsula, May 24, 1944
Source: Hawaii State Archives, Admiral Furlong Collection

In 1942, warehouses were constructed in the vacant blocks along Franklin, Lehua, and Lanakila Avenues. Work on clearing the area for warehouses started a few weeks after the attack but had to be delayed until the Navy legally got control of the property. This warehouse area was called the Pearl City Provisions Annex. Loko Weloka (the fishpond on the east side of the peninsula) was filled in and

provided additional land for warehouse and open storage use. In 1945, a 1,800-foot timber wharf was constructed to serve this annex, about where the eastern edge of this fishpond had been (Hawaiian Dredging Company [1946]: 19).

The former low-lying rice fields north of Palm Avenue were filled to create drier land for additional warehouses. A 1943 drawing labels this area east of

Lehua Avenue as the Pearl City Supply Depot. Another name, on a 1944 boundary map (OA-N1-894), is Pearl City Salvage Area. Maps from the 1950s call the area Pearl City Storage Area. Three large, double-gabled warehouses plus one smaller, open-sided building were constructed here, set at an angle to the street due to the railroad spurs that curved from Lehua Avenue. Two other open-sided buildings, used for cable storage, were sited parallel to Lehua Avenue (Fourteenth Naval District 1943).

The Pearl City Fuel Annex was built on the west side of Lehua Avenue, also on former rice fields. This was part of a joint Army-Navy War Reserve Gasoline Storage system. It was planned as a reserve system before the war, but it “became a dispensing system and was in constant use throughout the war” (Richardson [1946]: 228). The main tank farm for the system was in Waikakalaua Gulch, about ten miles from the Pearl City Fuel Annex, with pipelines connecting these areas, the Ewa Junction fuel facilities, Hickam Field, Pearl Harbor, and NAS Barbers Point. The Army and Navy cooperated on this system, but the Pearl City facilities were designed and built by the Navy (Richardson [1946]: 232). The two fuel tanks erected here in 1944 (Facilities S 87 and S 88) were 1924 tanks relocated from the Upper Tank Farm (Oeda 1995 and Gammon 2000).

Two additional carrier wharves were built in 1944, under a Navy contract with Hawaiian Dredging Co., along with additional warehouses at the southern end of the peninsula; this area was designated an aviation supply depot. The tip of the peninsula, right across the channel from Ford Island,

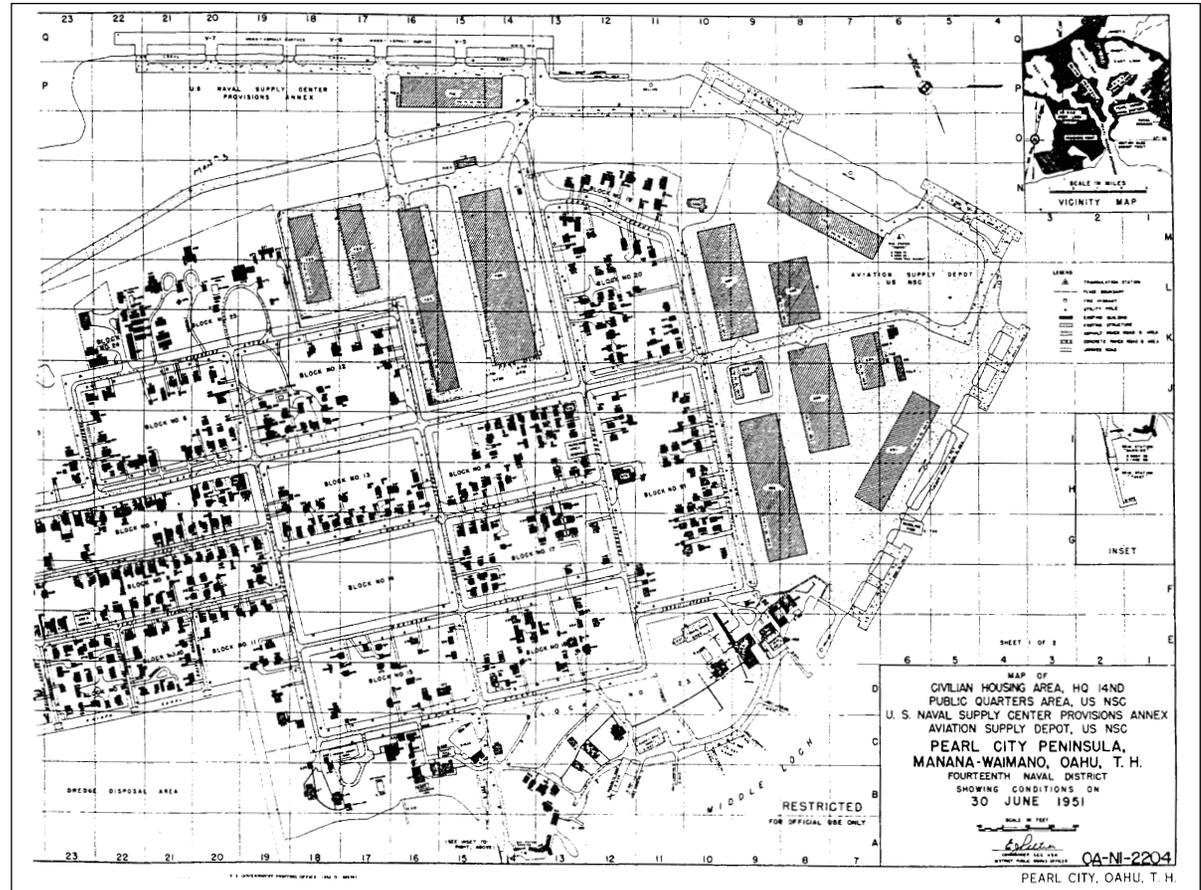
was a logical place for expansion of the carrier support facilities. Aviation gasoline was stored in the fuel area developed on Pearl City Peninsula during WWII, with the fuel line running down to the carrier wharves.

The George Fuller home, where President Roosevelt had visited in 1934, became a USO building in 1944 (Ellis 1995: 79). Many families continued to live in Pearl City Peninsula through the war years (Nicholson 1993: 57). Navy drawings show that they relocated some civilian houses within the peninsula about 1944, from the Naval Aviation Supply Depot to an area between Beryl Street and Kaiapo Canal.

In addition to filling Loko Weloka, the Navy further changed the shape of Pearl City Peninsula. The southern and western shorelines were altered by filling with dredged materials, and a pointed tip was created by the construction of the four carrier wharves. Hawaiian Dredging Company was contracted to build an earth dyke around Waiawa Peninsula in 1945, but the work was stopped “as a result of the inability to stabilize the sub-surface foundation and the continual settlement of the dyke sections” (Hawaiian Dredging Company [1946]: 28).

Military Acquisition of and Construction on the Peninsula after WWII

The Navy condemned all the land below the railroad tracks on the peninsula after WWII. A set of survey maps was prepared for the Navy, started in 1944 and updated through 1947, of the lands on the peninsula that were not already acquired. These detailed maps show the location of the existing



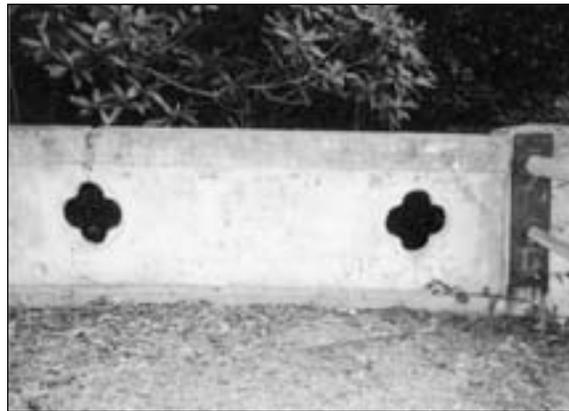
Pearl City Peninsula in 1951

Source: Pacific Division Naval Facilities Engineering Command

houses and outbuildings. The 1951 map on this page shows most of the same buildings. The structure list on that map indicates the Navy had reused most of the houses for “dependent rental housing.” There was opposition to the condemnation, especially to the prices the Navy offered, with petitions to the

Governor and articles and letters published in the newspapers (*Honolulu Advertiser* 1946a & b). However, the estimated 3,000 residents on the peninsula eventually moved, some taking their houses to new lots.

Very little remains of the pre-WWII period construction on Pearl City Peninsula. Two houses and one garage (Facilities 636, 637, and 639) are clearly pre-WWII buildings, although listed with 1944 dates in the Navy database. This is closer to the acquisition date than the actual year built. The bridges across Kaiapo Canal to the “Venetian Palms” subdivision remain. Shoreline walls, bollards, and other features remain on the western side of the peninsula between Aloha and Franklin Avenues. These are from either the PAA or WWII period.



One of the bridges over Kaiapo Canal
Source: Mason Architects, Inc.

Three houses on the former Pearl Harbor Yacht Club lot (Facilities 730, 731, and 732) are listed with 1942 “year built” dates; however, they do not appear on 1945 or 1951 maps of this area. It is possible that the construction dates are correct and the houses were moved here after 1951. The slab founda-

tions suggest, however, these three houses were constructed here sometime after 1951. In any case the designs of these houses are 1941 Defense Housing Project Type 47 and Type 47A plans. There is a garage with attached quarters (Facility 640) located north of these three houses. The garage is listed with a 1944 date but appears to be more recent construction. A house (Facility 633) and a garage (Facility 632) were either relocated to or constructed on the former Macintyre-Robinson parcel in 1948 and 1950, respectively.

The area of the Venetian Palms subdivision was designated a “dredge disposal area” on the 1951 map. Later maps labeled the area as a landfill. All the canals of this subdivision, except the Kaiapo Canal, disappeared under fill material. Starting in the 1950s, the Navy cleared almost all of the houses on the peninsula and built Navy housing. Most of the housing on the peninsula dates from 1952, 1969, or the 1990s (Mitsunaga & Associates, Inc. 1995: iii). The 1952 and 1969 buildings are now being replaced or renovated. The southern and eastern shores of the peninsula have been reserved for non-residential uses, perhaps because most of this area is fill land. Some large buildings have been recently constructed here, including new facilities for Navy Sea, Air and Land (SEAL) teams.

In the Pearl City Fuel Annex, almost all the WWII facilities have been demolished, replaced, or extensively altered. Only the gasoline pump house (Facility 85) is largely intact. Several structures were added to this fuel area since the 1940s. Two fuel tanks were built by the Chicago Bridge and Iron Company at the annex in 1951–1952. One was

demolished ca. 1996 and the other tank (Facility S 94) was completely rehabilitated in 1992. Another tank (Facility 775) extant in this annex dates from 1963. A replacement tank (Facility S 799) for the 1944/1924 tank was built in 1982. The fuel tanks are no longer used by the Navy.

Of the numerous other facilities added to the peninsula during WWII, only a few remain. These are the warehouses and an air raid shelter built in the filled-in rice fields (now a Camp Smith annex area), plus one warehouse (Facility 695) and four concrete wharves (Facilities V1–V4) in the former Aviation Supply Depot at the tip of the peninsula.

Major Landscape Features of Neighborhood

The Pearl City Peninsula neighborhood faces the Pearl Harbor Middle Loch. Along the water’s edge, *kiawe* and *milo* scrub brush screen much of the neighborhood from the water. This neighborhood seems to have no discernible layout and no significant landscape theme. It is scattered with mature canopy trees.

Three of the houses in this neighborhood are set back a little from Laniwai Avenue to give them small front yards and public areas. The other three houses in this block are set further back from Laniwai Avenue and their main axis is oriented perpendicular to that street. The foundation planting around the buildings are of a tropical plant palette.

The interior of the neighborhood contains large canopy trees such as monkeypods and banyans. There are numerous coconut palms on the north end of the block. There are also a few coconuts

scattered throughout the rest of the block. The area around the Uyehara House and Facility 636 affords the only real views from the neighborhood, looking toward the Waianae Mountain Range across Middle Loch. The two large open grassy areas are north of the Uyehara house and garage (Facilities 637 and 639), and the former Macintyre lot, south of Facility 636 and wrapping around Facility 633.

On the former Colburn/Uyehara lot numerous historic site features remain, including the wrought-iron entry gate with lava rock pillars, lava rock retaining walls, gate posts with bronze-rimmed round light fixtures, steps in the garden, terraced levels stepping down toward the canal, an elevated flat mound, and several landscape stones placed singly or in groupings.

Major Trees/Palms

- Monkeypod
- Banyan
- Royal poinciana
- Mango
- Coconut

Other Trees

- Shower tree
- Kolomona
- Plumeria
- Brassia
- African tulip



Landscape at Pearl City Peninsula

Pearl City Peninsula Historic Housing Designs

This historic housing area is very small, consisting of only one block containing six residences. There is quite a variety of housing styles represented, reflecting the dates of construction from the late 1920s through the 1940s. Despite the varying styles, there is a feeling of a unified neighborhood, mostly because they are all one-story, hipped-roof, wooden houses.

Facility #	Addresses	Facility or Design Name	Date
636	364 Laniwai Avenue	Macintyre House	1920s-30s
637	1038 Ashley Avenue	Uyehara House	c. 1928
633	346 Laniwai Avenue	L-Plan Lanai House	1948
730, 731, 732	318, 310, 308 Laniwai Avenue	Defense Housing Project Design	c. 1942 (c. 1952 PCP)

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*Rear of houses along Laniwai Avenue, as seen from Lanakila Avenue
Source: David Franzen Photography, November 2000*

The historic grouping of houses on Pearl City Peninsula is an example of a historic enclave surrounded by a larger, more modern residential community. The variety in the houses, the amount of open space around them, and the waterfront location are also distinctive characteristics of this neighborhood. The historic Pearl City Peninsula housing area has six houses and three garage buildings (only two of the garages are considered contributing historic buildings). Because of the complex history of this neighborhood, varying architectural styles are apparent. There are common elements among the wooden houses, but the level of craftsmanship and decoration ranges from ornate to very simple.

The six residences in this neighborhood include three unique houses and three others that share the same basic housing design. These four different designs are analyzed in this report.

Macintyre House (Facility 636)

The style of this house is difficult to categorize since it has some classical and some local vernacular architectural elements. The house is associated with two *kamaaina* families—the Malcolm and Florence Hall Macintyre family which owned the land from 1918-1935, and the T. Edgar and Iwalani Robinson family, which owned it from 1935 until the Navy acquired it. This house was probably built by the Macintyre family before the parcel was sold to the Robinsons since the deed mentions buildings. Built as a custom home, it is the only one of its kind at any Navy installation. It is also one of only two remaining examples of residences built on the shoreline of Pearl City Peninsula before WWII, when the area was still civilian owned.

CHARACTER-DEFINING FEATURES OF FACILITY 636

Exterior Features:

- Post-on-block foundation with termite shields and angled bracing.
- Complex roof with four cross-gables; broken horizontal cornices on three front gables.
- Wood-framed house with both drop siding and vertical tongue-and-groove siding as sheathing.
- Quoin-like appearance of drop siding at the front of the house.
- Brick entry stair, stepped up to the landing from three sides in a pyramidal manner.
- Wood stair to kitchen door and bedroom hall door.

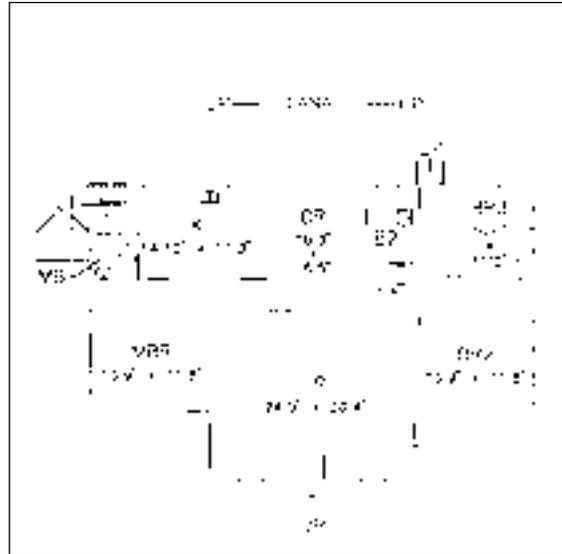


*Front view of Facility 636 (Macintyre House) from driveway
Source: David Franzen Photography, July 2000*

- Remaining front porch elements, including wood railing, balusters, and paired columns.
- Entry door: two lights over one panel.
- Rear door to dining room: paired five-light sliding with matching sliding screens and five-light sidelights.
- Rear door to bedroom hall: one light over one panel.
- Variety of windows: most 6/6 double-hung but also 6/1 and 1/1 double-hung, pairs of three-light casements in kitchen, and three-light sliding and fixed windows in living room.
- Wood louvered shutters on two windows on front facade.
- Lunette windows in attic above those windows.



*Dining room of Facility 636 looking toward rear patio
Source: David Franzen Photography, July 2000*



Facility 636 floor plan

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Interior Features:

- Tongue-and-groove (T&G) fir flooring.
- Canec wall and ceiling panels in most rooms.
- Kitchen walls: T&G with some panels in upper portions.
- Kitchen ceiling: boards and battens.
- Elaborate moldings at kitchen and living room ceilings.
- Corner trim boards at the wall intersections of several rooms.
- Simple 8" high baseboards and quarter-round moldings at most floor/wall intersections.
- Mostly single-panel wood doors.

- Swinging kitchen door with a diamond-shaped vision panel.
- Quarter-circle shelves in corner of kitchen and narrow shelves with decorative brackets above stove.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Metal awnings over several windows.
- Modern flush door at kitchen entry.
- Aluminum hardware.
- Vegetation along shoreline which blocks view of water.
- Facility 640 (modern garage/dwelling unit).

Uyehara House (Facility 637)

This house and the parcel are significant both architecturally and historically. The house is an excellent example of Hawaiian regional-style architecture of the late 1920s. It was built for Dr. Yokichi Uyehara, a successful Japanese-born doctor who practiced in Hawaii both before and after his internment on the mainland during WWII. The land is also associated with John F. Colburn II, minister of the interior under Queen Liliuokalani. The house has been altered very little over the years. Some of the yard elements, as discussed in the Pearl City Peninsula landscape section, are thought to have been erected before Dr. Uyehara bought the property. The parcel is bordered on the north by the Kaiapo Canal, which was part of the Venetian Palms subdivision built about 1930 within the Hawaiian fishpond, Loko Paauau.

CHARACTER-DEFINING FEATURES OF FACILITY 637

Exterior Features:

- Complex wood-shingled roof with numerous intersecting hips, all with smooth curves.
- Unusual roof design with curved planes of wood shingles supported on roof trusses; roof ridge ends also curve upward.
- Chimney of lava rock with red beaded mortar joints.
- Wide overhanging eaves with exposed tongue-and-groove sheathing.
- Rafter ends rounded, except for more elaborately shaped rafter ends on corner lanai roof.



Front view of Facility 637 (Uyehara House)
Source: David Franzen Photography, July 2000

- Wood-shingled walls which flare out slightly at the bottom.
- Double-wall, wood-frame structure.
- Coral blocks at entry stair (rectangular blocks) and corner lanai (polygonal shapes).
- Natural bark-stripped *ohia* logs supporting roof over entry and corner lanai.
- Concrete stairs and landing to kitchen entry; metal railing with geometric patterns.
- Pairs of sliding 15-light pocket doors at main entry and doorway to side lanai.
- Single 15-light door to bedroom off entry lanai.
- Kitchen entry: five-panel door.



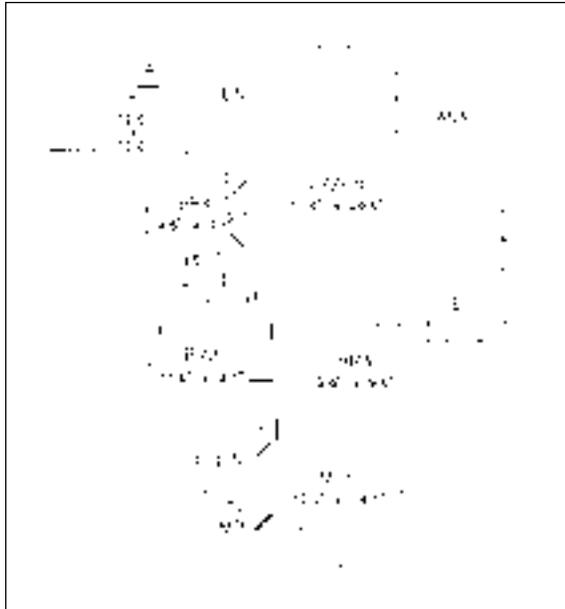
Living room of Facility 637, looking toward fireplace with entry door to the left
Source: David Franzen Photography, July 2000

- Original windows either six-light sliding sash that slide into wall pockets, or six-over-one-light double-hung type.
- Low foundation perimeter wall of lava rock, with wood posts and screening of vertical wood strips between lava rock and floor beam.

Interior Features:

- Unique vaulted living room ceiling with large textured panels between carved dark roof beams.
- Granite fireplace mantel with red-glazed fire-brick hearth.
- Complex molding at the wall/ceiling intersections of several rooms.
- Wide moldings over panel joints in ceilings of dining room and some bedrooms.

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Facility 637 floor plan

- Board-and-thin-batten finish on some walls and ceilings.
- Dark wood flooring of 2-inch-wide tongue-and-groove boards.
- Decorative ceramic tile pattern in master bath floor and tub surround.
- Door from living room to laundry hall with eight panels; others with single panels.
- Decorative window valances.
- Original kitchen cabinets.
- Round recessed medicine cabinet in one bathroom.

- Most door and window hardware original.
 - Some original light fixtures.
- ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER**
- Dropped ceiling and fluorescent lights in “dinette.”
 - Alterations to kitchen windows.
 - Alterations in hall now holding washer and dryer.
 - Incompatible modern exterior light fixtures on house.

L-Plan Lanai House (Facility 633)

Facility 633 is a house that was probably relocated to this site in 1948. As the only example of this style of house at Naval Base Pearl Harbor, it is significant architecturally. Its historical importance is more difficult to assess, since there are no records of its original construction. The house was either built on or moved to this site in 1948. No records in the Navy housing office files indicate where it was relocated from, its original construction date, or its original owners. If the Navy had built the house in 1948, the original construction drawings would likely be on file, but none were found. In any case, it is significant as one of the houses added by the Navy to this neighborhood after WWII.

CHARACTER-DEFINING FEATURES OF FACILITY 633

Exterior Features:

- One-story house with post-on-block foundation and unique L-plan lanai.
- Foundation screen of horizontal boards.

- Wood-framed, double-wall construction with drop siding.
- Hip roof with moderate pitch and cross-hip for bedroom wing.
- Wide overhanging eaves with exposed tongue-and-groove sheathing.
- Clipped rafter ends covered with fascia board.
- Sets of three round vent holes between every other rafter pair.
- Concrete stair to each door with pipe railing.
- Side door stair with steps in two directions from landing.
- One-light over one-panel doors to L-shaped lanai.
- Kitchen door with three lights over one panel.
- Band of windows enclosing lanai; seven triplets of three-light sliding sash.
- One-over-one-light double-hung windows in bedrooms, dining room, and kitchen.
- All windows with wood-frame screens.

Interior Features:

- Wood tongue-and-groove fir flooring in most rooms.
- Varnished plywood walls in lanai and bedroom hall.
- White painted plywood or masonite walls elsewhere.
- Canec ceilings with mitered corners.



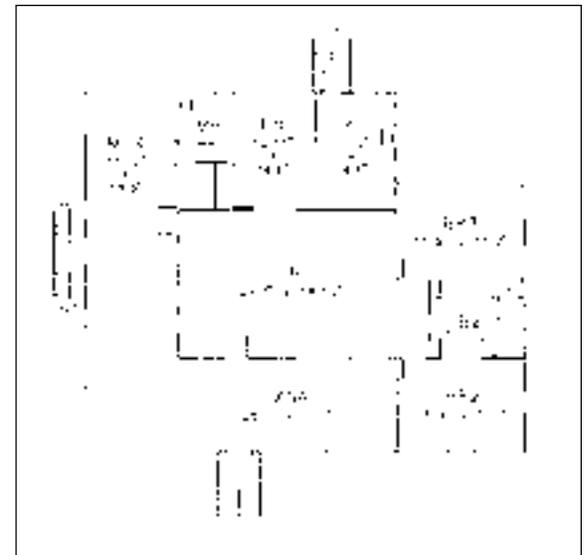
Front of Facility 633 with garage in background to the left
Source: David Franzen Photography, July 2000



Enclosed lanai of Facility 633 with living room to the left and entry to the right
Source: David Franzen Photography, July 2000

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- Coved moldings at all ceilings.
- Built-in cabinet in dining room.
- Interior windows between living room and lanai: three-light sliding sash in sets of three.
- Decorative light fixtures on lanai, including four half-cone sconces and two quarter-globe sconces.
- Period light fixtures in bathrooms and bedrooms with ribbed glass.
- Trapezoidal-shaped light fixture over kitchen sink.
- Stainless steel sink and counters in kitchen.



Facility 633 floor plan

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Floodlights attached to outside of house.
- Two colors of asphalt shingles on roof.
- Ventilating fan added in kitchen and ceiling fan in living room.
- Jalousie windows in bathrooms.

Defense Housing Project Design (Facilities 730, 731, and 732)

These three single-story houses are located in a row, close to Laniwai Avenue. Unlike the three houses discussed above, their main entries are oriented to the street. The houses are listed in the Navy database with 1942 dates, but maps show they were not in this location in the 1940s or early 1950s. About 1952, these residences were either moved here or built from Defense Housing Project Type 47 and Type 47A plans that are almost identical in design. The main difference is that Facility 732 (Type 47A) was built as a three-bedroom house, while Facilities 730 and 731 (Type 47) were built as two-bedroom houses, but had third bedrooms added about 1957. These are significant historically and architecturally as the only known remaining examples of these 1941 Defense Housing types.

5-146

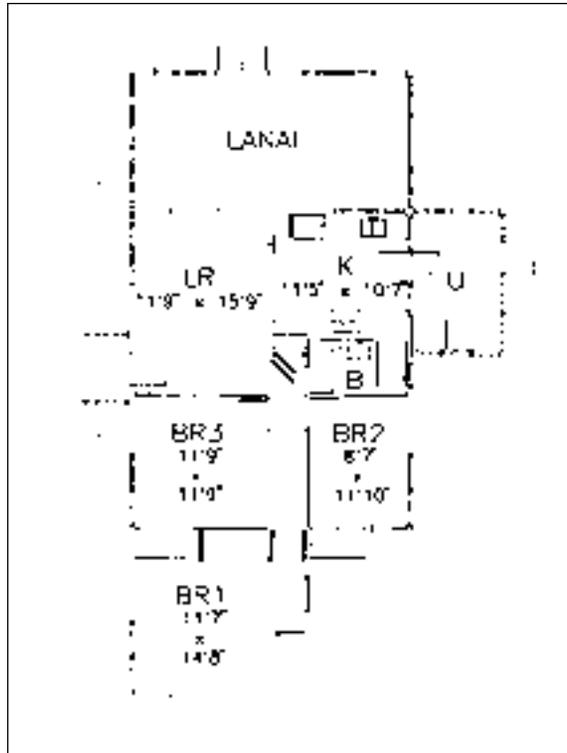
CHARACTER-DEFINING FEATURES OF DEFENSE HOUSING DESIGN

Exterior Features:

- One-story wood-frame houses on concrete slab.
- Distinctive dual-pitch hip roof with a decorative roof ridge trim board (longer ridge in Facility 732).
- Wood-louvered gablets for ventilation.
- Screened rectangular vents in roof frieze.
- Wide eaves with exposed tongue-and-groove sheathing.
- Plumb-cut rafter ends covered with fascia boards.
- Single-wall construction, except double walls around the original windows to mask their inward projection.



Front view of Facility 730 (Defense Housing Project Type 47)
Source: David Franzen Photography, July 2000



Facility 730 floor plan (Facility 731 plan is mirror image)

- Five horizontal girts (one main girt with four thinner girts above) on the vertical tongue-and-groove siding.
- Main girt aligned with bottom of living room windows.
- Four thin girts aligned with tiers of awning windows.
- Awning windows: in tiers of three or four sash.

- Decorative screen with geometric pattern over bathroom window (except Facility 732).
- Entrance porch supported by wood posts and a beam with slightly curved ends.
- Diamond shape in porch railing braced by horizontal boards.
- Main door: three horizontal lights over two vertical panels (except Facility 730).
- Lanai: pair of five-light French doors.
- Rear door: screen above lower panel (with added sliding plywood panel over screen for security in Facility 732).

Interior Features:

- Canec panel ceilings.
- Interior walls of vertical tongue-and-groove, except plywood panels around windows to mask inward projection.
- Diagonal lattice ventilation openings usually located between closets (Facility 732).
- Quarter-round molding at wall/ceiling intersections, on top of baseboards, and at door casings.
- Original interior two-panel wood doors.
- Wood door from kitchen to utility porch with three lights over one panel (Facilities 730 and 731).
- Sloping shoe platforms at the bottom and rear of closets, with half-round molding (Facility 732).
- Some original or period-appropriate light fixtures.



Facility 731 rear bedroom, showing corner windows
Source: David Franzen Photography, July 2000

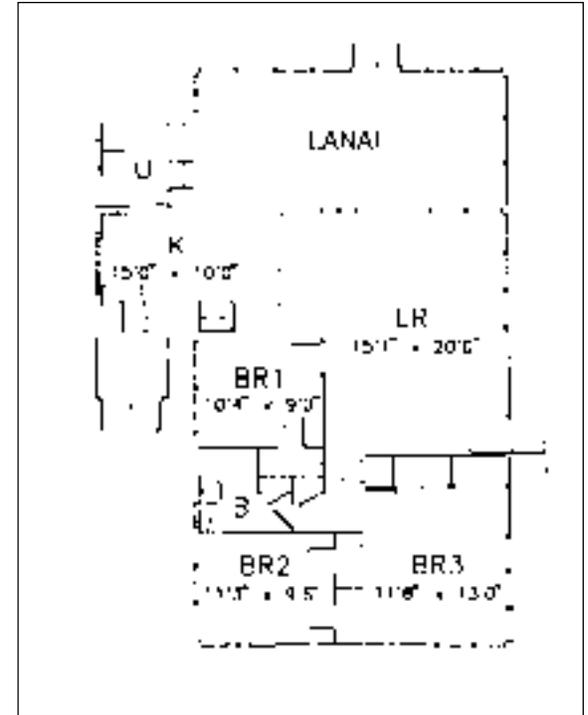
ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie windows.
- Chain link fence.
- Low-pitch roof over lanai, not well integrated with main roof.
- Pipes and utility conduits attached to the exterior on the south side of the utility porch and near the bathroom window (Facility 731).
- Many closet doors removed (Facility 732) or entirely replaced with sliding flush doors (Facilities 730 and 731).



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*Front view of Facility 732 (Defense Housing Project Type 47A)
Source: Mason Architects, Inc.*



Facility 732 floor plan



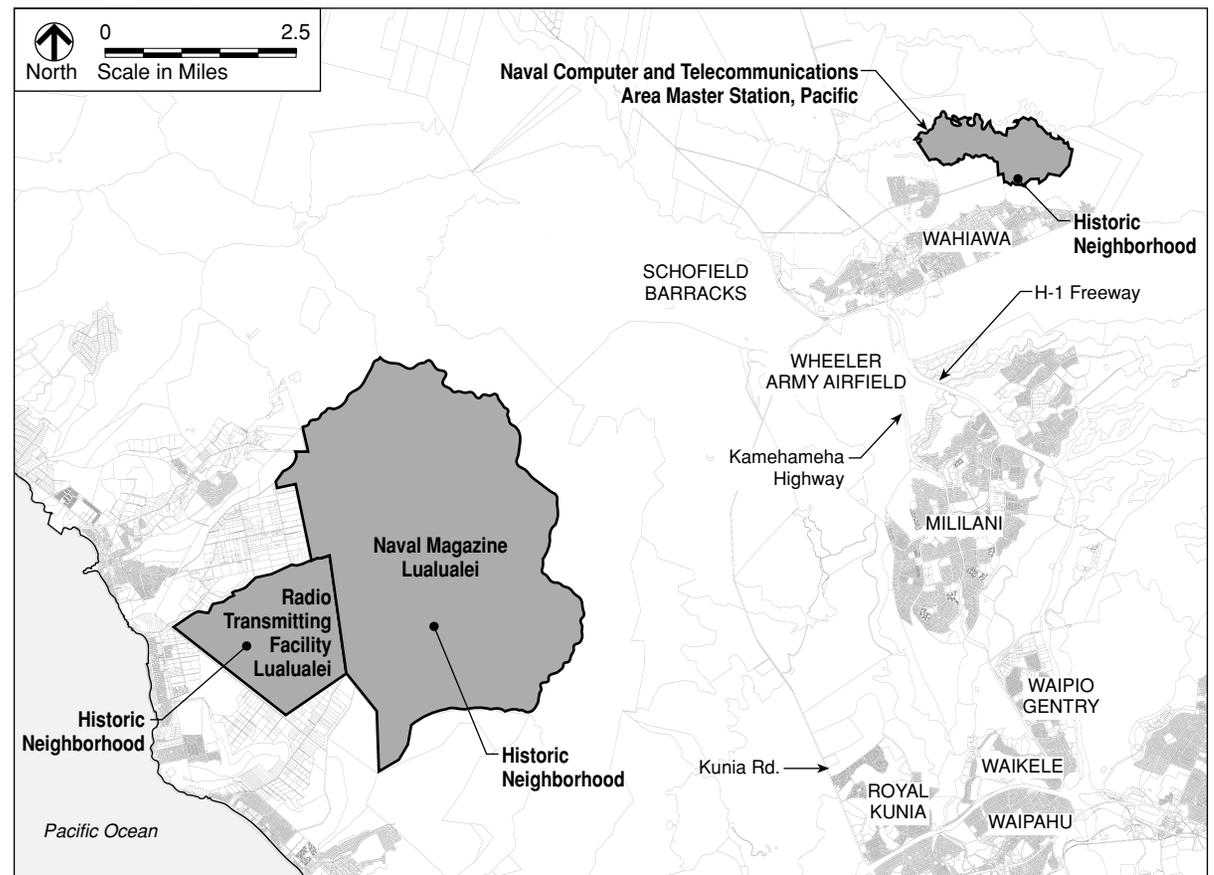
*Detail of ventilation opening in Facility 732
Source: Mason Architects, Inc.*

Chapter 6

Historic Neighborhoods: Outlying Navy Installations

In addition to the complex of naval activities at Pearl Harbor, the Navy has other locations on Oahu, three of which have historic housing areas. Two outlying Navy installations, Naval Magazine (NAVMAG) Lualualei and Radio Transmitting Facility (RTF) Lualualei, were established in Lualualei Valley during the 1930s. In 1940, construction started on a radio receiving station near Wahiawa, now known as Naval Computer and Telecommunications Area Master Station, Pacific (NCTAMS PAC). Housing for officers and enlisted personnel were developed since these remote areas had little to no rental housing available nearby.

In the late 1920s, the Navy started to plan for relocation of its ammunition depot from Kuahua Island, which was too close to other activities. Construction started in 1931 and branches at Lualualei and West Loch were officially commissioned as Naval Ammunition Depot (NAD) Oahu on May 1, 1934. Three houses were erected at West Loch and 14 houses were built at Lualualei, the headquarters branch. All of the NAD housing dates from 1932 and may have been occupied before the official commissioning of the two branches. Installation activities included ammunition repair and



Outlying Navy Installations vicinity map

reworking. In 1974, the name was changed to Naval Magazine, and facilities were used only for the storage of ordnance. With the planned consolidation of this function at West Loch, the NAVMAG Lualualei houses are now unoccupied. The three houses at West Loch, located within an explosive distance arc, were demolished in the late 1990s.

The Navy's first radio station in Hawaii was established at Hospital Point in 1916, located between the ship repair and hospital areas. As the latter two activities expanded and other uses were established at Pearl Harbor, relocation of the communications facilities was the logical option. A receiver station had been constructed at Wailupe in 1920, and land was purchased in Lualualei Valley in 1931 for a new transmitter facility, which was activated in 1936. Originally named Naval Radio Station Lualualei, it is now called Radio Transmitting Facility (RTF) Lualualei, a branch of Naval Computer and Telecommunications Area Master Station headquarters in Wahiawa. Ten of the 11 houses constructed in 1937 remain at the RTF Lualualei installation. Three six-plex residential buildings for married enlisted men were erected in 1941 but demolished by 1993. The 10 extant houses are unoccupied since the base is scheduled for closure in October 2001.

By 1939, with the U.S. Navy fleet stationed in the Pacific, increased radio communications were essential, and the 1920 receiving station at Wailupe was inadequate. Construction of a large receiving station started at Naval Radio Station Wahiawa (now NCTAMS PAC) in 1940, including three officers'

houses and 27 duplexes for married enlisted men and chief petty officers. All the housing was completed by October 1941. The duplexes have been greatly altered and have lost their historic integrity. Only the three officers' quarters are considered historic housing at this installation.

Naval Magazine Lualualei Neighborhood Significance

The Naval Magazine Lualualei installation has a large number of relatively intact structures remaining from the initial base construction in the 1930s and from the WWII period. They have retained their historic integrity and are significant due to their association with the early development of the WWII build-up of the base, and the role that the base played before and during the war as the Navy's ammunition maintenance and storage facility in the Pacific. Many of the early structures are in the Renaissance Revival style, with corner quoin details and arched openings. These buildings serve as excellent examples of the architectural style and planning used by the military at that time.

There are few areas in Hawaii where residential neighborhoods dating from the 1930s have remained unaltered. Private homes typically are renovated and added to over the years. Military housing is one of the few places where alterations and repairs can be regulated, and they are usually done by military construction teams as a standardized alteration to all similar units. The relatively unaltered housing at Naval Magazine Lualualei maintain a unity as a historic residential area due to this fact.

Neighborhood History

Throughout the first decade of the 20th century, the U.S. Congress, the President, and the Department of the Navy continually identified Japan as the naval power to be confronted in the Pacific.

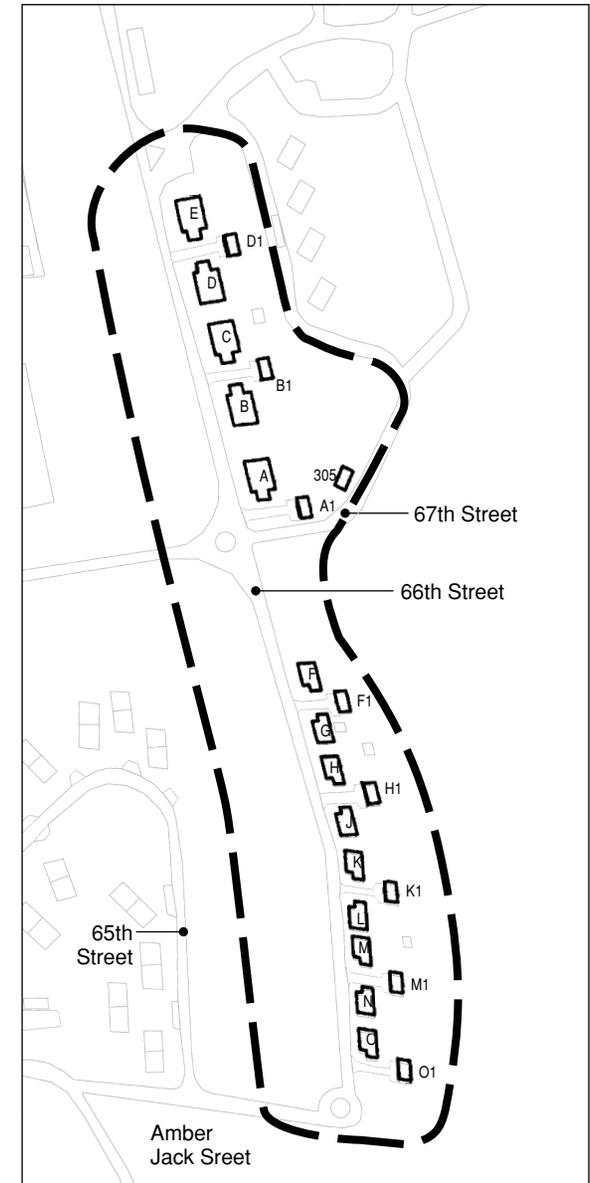


Naval Magazine Warrant Officers' and Civilian Quarters under construction, November 30, 1932

Source: Natural Archives Still Photo Collection, Folder 71 CA 158 E

The Navy's view was that a coaling station and repair facility in Hawaii were essential to remove any forward assault base from Japanese hands and to keep American commercial lines open to the Far East. Pearl Harbor was recognized as a safe anchorage and the only defensible harbor in the Hawaiian Islands. The Pearl Harbor channel was first dredged in 1902. In 1908, Congress appropriated funds to improve the channel, build a dry dock, erect machine ships and storehouses, and develop the shipyard. By the end of 1912, construction of the naval magazine on Kuahua Island in Pearl Harbor was in progress, and more land in areas fronting the harbor had been purchased. Pearl Harbor Naval Base continued to expand, with a submarine base, naval air station, and many other facilities constructed. The 1920s saw Pearl Harbor transform into a major overseas base, with its major purpose being the repair and maintenance of the U.S. Fleet.

The ammunition depot built at Kuahua Island proved to be located in the midst of base activities,



Naval Magazine Lualualei neighborhood



Naval Magazine Lualualei, c. 1933
Source: *Naval Magazine Lualualei, Public Affairs Office*

so in 1926, the General Board recommended relocating the depot. Between 1929 and 1931, the Navy acquired more than 8,300 acres at Lualualei Valley in west Oahu. A contract was awarded in early July 1931 to Thomas Haverty Co. of Los Angeles for work at the West Loch (at Pearl Harbor) and Lualualei Magazine Branches. The contract called for construction of 135 buildings, 13 miles of railroads, 15 miles of paved roads, and water, sewer, drainage, and electrical power systems. Roads and railroads were constructed to connect the West Loch and Lualualei Branches; the railroad was 18.5 miles long. The water supply system at Lualualei included a tower with a 100,000-gallon tank and several

6-4



Barracks building, c. 1933
Source: *Naval Magazine Lualualei, Public Affairs Office*



Row of Officers' Houses at Naval Magazine Lualualei, with Commanding Officer's Quarters in foreground, May 5, 1933
Source: *National Archives Still Photo Collection, Folder 71 CA 158 E*

reservoirs. The buildings constructed at Lualualei, the headquarters branch, included a barracks for officers and enlisted men, officers' housing, an administration building, a dispensary, shop buildings, a stable, a mine filling building, a mine storage building, guard towers, and magazines. The buildings were constructed of cast-in-place concrete, many with a Renaissance Revival style flavor, with housing and administration buildings often having rusticated corners quoins and other decorative details. Most buildings have steel frame pivot or wood double-hung windows. Flat roofs were constructed with built-up-roofing over concrete, while pitched roofs had steel or wood construction.

The Kuahua depot closed on April 30, 1934, and the two branches of the Lualualei Naval Magazine, at Lualualei and West Loch, were officially commissioned as Naval Ammunition Depot, Oahu, on May 1, 1934.

During World War II the Lualualei depot was expanded, with 72 more magazines and additional storage buildings and housing added. Some of these



Quarters A, Naval Magazine Lualualei, June 13, 1934
Source: *National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph #10931*

structures were built in the same style as the 1930s buildings, but most were not as decorative. Many structures other than the magazines were of more temporary and quickly-built materials such as wood or steel frame construction and wood or metal finishes. The base expansion still could not accommodate all of the Navy's ordnance, so the 350-acre Waikele Branch, located in central Oahu, was developed beginning in 1942. Construction of 120 magazine tunnels began in 1942, and was completed in November of 1943. With an additional 254 acres added to the Lualualei Branch in 1945, it became the largest naval ammunition depot in the Pacific.



Naval Magazine Lualualei Officers' Quarters, February 17, 1935
Source: *National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph #11460*



Magazines under construction at Lualualei, November 21, 1941
 Source: Naval Magazine Lualualei, Public Affairs Office

During the Korean War, Lualualei served as a main source of ammunition and as a site for the repair and rehabilitation of ammunition stock. Following the end of the Korean War, the Navy downscaled its Lualualei operations while expanding its forward Pacific capability. At this time, many of the WWII era structures were demolished and some of the land parcels were excessed. This was a result of declining need for the facilities and provisions of the 1959 Statehood Act, which required

federal agencies to review and justify retention of lands. By June 1964, the military had reduced its property holdings to present levels.

During the Vietnam War, forward facilities such as Guam were better located to support the war effort. The closing of Lualualei was considered since it exceeded military needs. In 1973, the U.S. Department of Defense declared Lualualei to be excess and recommended consolidation of its functions at the Waikele and West Loch Branches. Once

the ammunition operations were consolidated, the Lualualei land could be transferred to the Army for use as a training area. After further review, this plan was dropped and the Navy retained the Lualualei property. Its role was changed from a Naval Ammunition Depot, with ammunition repair and reworking, to a Naval Magazine, for the storage of ordnance for the Army, Navy, and Air Force.

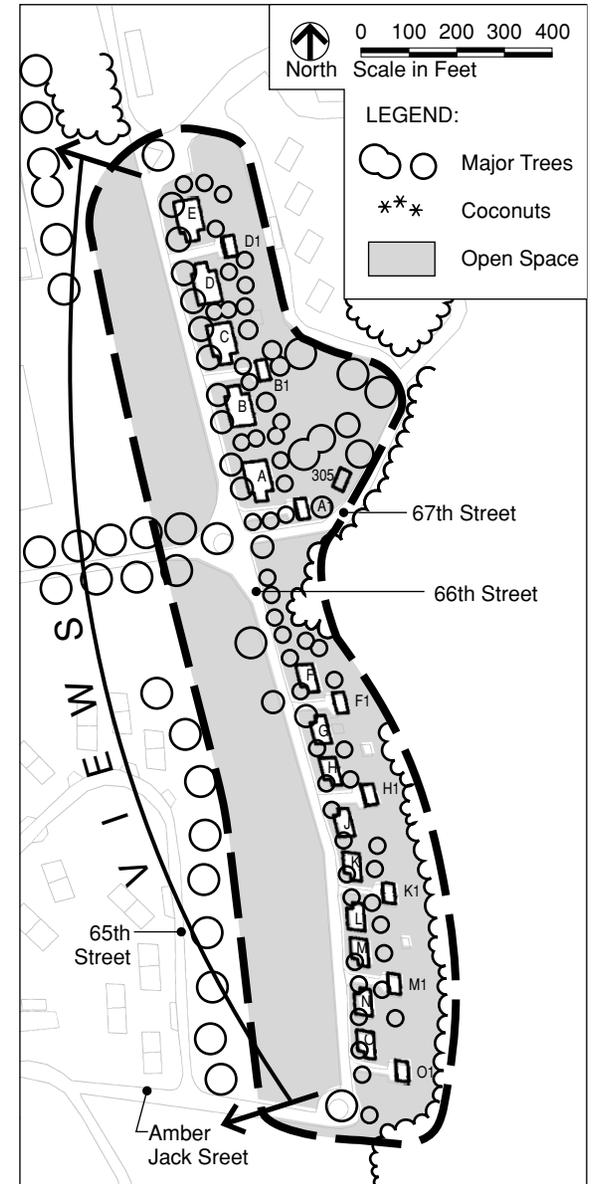
Agricultural outleasing of unused land at the Lualualei depot had begun in 1971. The depot's name was officially changed on July 1, 1974, from Naval Ammunition Depot to Naval Magazine Lualualei. Many of the WWII-era structures were demolished during the 1970s and 1980s, but nearly all of the original 1930s construction was retained. In the 1980s, the U.S. Department of Defense shifted its construction focus, placing greater emphasis on quality of life projects. More livable barracks, housing, and recreation facilities resulted. An effort was made to create more pleasant settings, including landscaping and attractive signage.

Construction of storage and assembly buildings in the late 1980s and early 1990s reflected weapons advances. Facilities were built to fit requirements for storing guided missiles and advanced underwater weapons. The primary role of Naval Magazine Lualualei remained the storage (war reserve and operational stock), maintenance, renovation, and issue of ammunition, explosives, ordnance, and weapons. The Waikele Branch has since been closed. Today, the installations at Lualualei and West Loch store or handle nearly every piece of ammunition used by the military in Hawaii.

Major Landscape Features of Neighborhood

The Naval Magazine neighborhood at Lualualei has a single access linear layout with higher-ranking officers' quarters separated from lower-ranking officers' quarters by 67th Street, which is a partial dirt road that loops around 66th Street back to Constitution Street. Both Constitution and 66th Streets are lined with monkeypods and face the neighborhood's grassed open space.

The five higher-ranking officers' quarters (A–E) are larger units set back from 66th Street, which creates a formal front yard space. The rear yard space is less formal with shrub hedges used to help screen the spaces. The garage structures are located between the dwellings, with two dwellings sharing one garage with the exception of unit A. The foundation planting around these quarters is tropical in nature, with colorful flowering shrubs and small flowering trees. Between the units are large vertical trees that help separate the units and provide some visual privacy.



Naval Magazine Lualualei landscape



Landscape at Naval Magazine Lualualei
Source: Belt Collins

The lower-ranking officers' quarters (F–O) are smaller units spaced closer together. They are set back from the road to create a formal front yard, but these units are not landscaped as well as the others. The foundation planting around these units is non-existent. There are a few small trees between the units but nothing like those of Quarters A–E.

Due to the neighborhood's elevation and location at the foot of the mountain, it has great views out of the valley toward the ocean. The open space fronting 66th Street creates some separation for the neighborhood with the rest of the base. It also creates a pleasing view of the neighborhood when heading up Constitution Street.

At the back of Quarters A and B, there is an open area surrounded by a number of stone walls that seem to enclose a central space. A double row of walls lead from the central space back toward Quarters B. This area contains a number of large trees in a grassy park-like area. It is still well maintained compared to the rest of the neighborhood.

Major Trees/Palms

- Monkeypod
- Banyan
- Royal poinciana
- Norfolk Island pine

Other Trees

- Pink tecoma
- Plumeria
- Brassaia
- African tulip

Naval Magazine Lualualei Housing Designs

Naval Magazine Lualualei is a good example of a residential community constructed to support a magazine installation. The large amount of open space and prominent location overlooking the main administrative area greatly enhance this neighborhood. The 14 houses constructed in 1932 during the initial base development to accommodate the

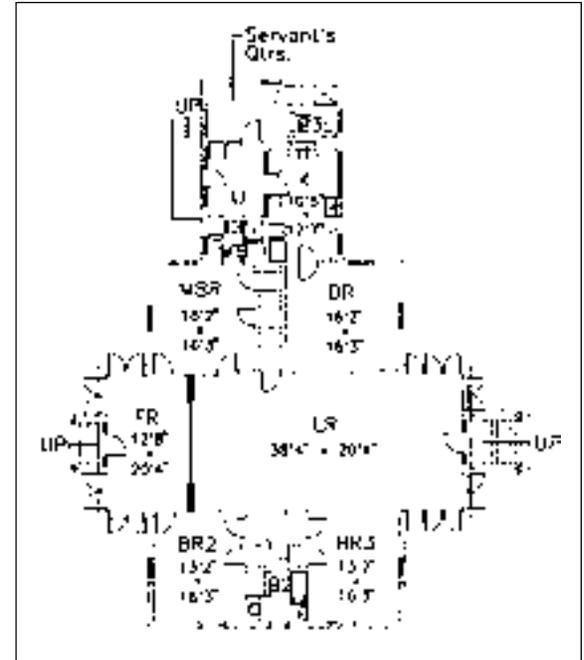
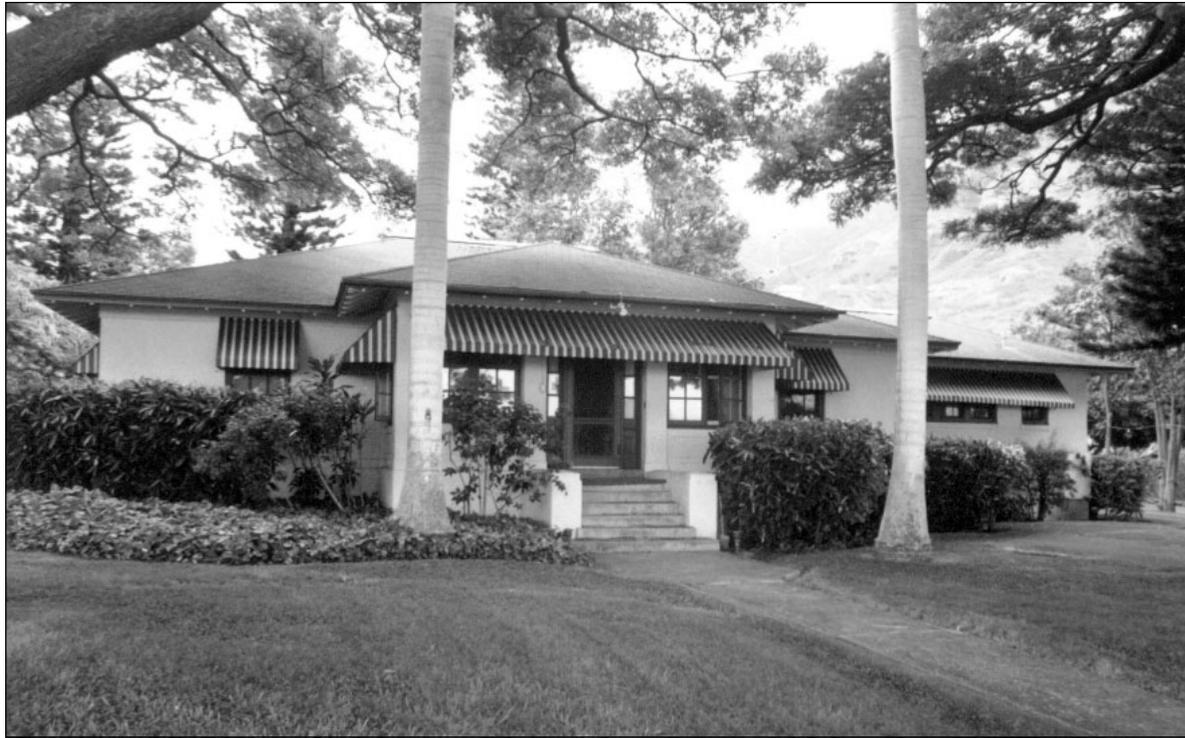
officers of the installation, are relatively unaltered. There are three different floor plans, but all have the same architectural style and details, creating a cohesive neighborhood of houses aligned in a row in a significant setting. Small gable-roofed garages are located behind the houses. Quarters A has its own single garage; the other quarters have double garage structures, each shared by two houses. These garages, constructed with the houses in 1932, are the same as those built at RTF Lualualei.



Naval Magazine Lualualei neighborhood
Source: Belt Collins

6-7

Facility	Facility or Design Name	Similar to Facility (Neighborhood)	Date
A	Inspector's Quarters/ Commanding Officer's Quarters	–	1932
B, C, D, E	Officers' Quarters	Commanding Officer's Quarters, Quarters A (Lualualei Radio Transmitter Facility)	1932
F-O	Warrant Officers' & Civilians' Quarters	Senior C.P.O. Quarters, Quarters C (Lualualei Radio Transmitter Facility)	1932



Quarters A floor plan



Quarters A, view of lanai from living room
Source: David Franzen Photography, November 1994

Front view of Quarters A (Inspector's Quarters)

Source: Belt Collins

Inspector's Quarters/Commanding Officer's Quarters (Facility A)

The largest of the three historic house types at the base, the plan for this building is very similar to that of Quarters B-E, but is slightly larger. This building has a symmetrical main section containing the living room, dining room, three bedrooms and a bathroom. An originally screened lanai on the back side has been enclosed and converted into a family room. The kitchen wing extends out from

the right side of the house, and contains the master bathroom, a utility room, and servant's quarters with a separate bath.

Wood awnings over the windows and doors appearing in an early photograph of the houses have been replaced with metal awnings. The windows were replaced in a recent renovation and some of the kitchen and bath fixtures have been modernized, but the building retains its historic character.



Quarters A, view of dining room through living room
Source: David Franzen Photography, November 1994



Quarters A, view of living room and lanai from dining room
Source: David Franzen Photography, November 1994

Officers' Quarters (Facilities B, C, D, E)

There are four houses of this type at Naval Magazine Lualualei. Each of these concrete buildings has a symmetrical main section with a wing on one side almost identical to Quarters A's wing. The concrete front steps lead into a living room, with two bedrooms to one side, a lanai to the rear of the house, and the dining room and master bedroom on the opposite side. The kitchen, pantry, additional lanai, and servant's quarters are in a wing reached by passing through the dining room.

The original wood flooring has been covered with linoleum or carpet in many areas. Wood awnings over the windows and doors, appearing in an early photograph of the houses, have been replaced with metal awnings. The windows were replaced in a recent renovation and some of the kitchen and bath fixtures have been modernized, but the houses retain their historic character.



Front view of Officers' Housing (Quarters D)
Source: David Franzen Photography, November 1994



*Officers' Housing (Quarters B) sunroom/lanai with pocket door, bedroom door on right, and bed/bath hall in center
Source: David Franzen Photography, November 1994*

Warrant Officers' and Civilians' Quarters (Facilities F-O)

These nine single-story houses are the smallest of the three house types. They are L-shaped, with the entry at the inner corner leading to a lanai. Originally double 10-light French doors with flanking bi-fold doors led into the living room. In a recent

remodeling these doors have all been removed. At the back side of the house is the dining room, pantry, and storage room. Two bedrooms and a bathroom are to one side of the central living room. The wing with the kitchen, a dining alcove, and a small lanai with jalousie windows are on the opposite side.



*Front view of Warrant Officers' and Civilians' Housing (Quarters L)
Source: David Franzen Photography, November 1994*



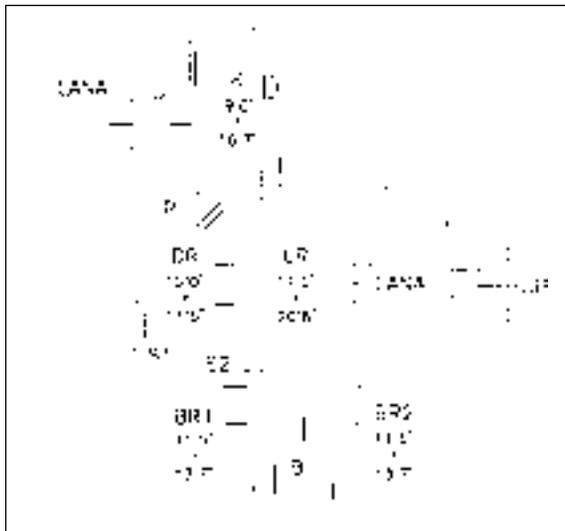
Officers' Housing (Quarters B-E) floor plan

The originally screened areas on either side of the front entry door and at the rear lanai had been replaced with jalousie windows. Fabric awnings over the windows and doors, appearing in an early photograph of the houses, have been replaced with metal awnings and some of the kitchen and bath fixtures have been replaced. The windows were replaced in a recent renovation and some of the kitchen and bath fixtures have been modernized, but the buildings retain their historic character.

CHARACTER-DEFINING FEATURES OF NAVAL MAGAZINE HOUSING

Exterior Features:

- Concrete front steps and cheekwalls.
- Concrete walls and foundation.
- Wood roof structure.



Warrant Officers' and Civilians' Quarters Housing (Quarters F-O) floor plan



*Dormer at roof, Quarters H
Source: Mason Architects, Inc.*

- Roof dormers (except Quarters A) and ventilating ridge.
- Exposed wood sheathing at eaves.
- Exposed clipped rafter ends.
- Shingle roofing.
- Pilasters with accentuated capital and base at front entryway.
- Decorative panel detail below entryway windows.
- Concrete chimney.
- Hopper transoms at front and rear entry doors.
- Wood panel doors with glazing.
- Wood casement windows.
- Wood double-hung six-over-six light windows.
- Heavy concrete sill at windows.

Interior Features:

- Multi-light double-hinged and sliding pocket doors between living room and rear lanai at Quarters A-E.
- Bi-fold, 10-light doors flanking 10-light double doors between living room and front lanai at Quarters F-O.
- Transoms at entry doors.
- Two-panel wood interior doors.
- Historic door and window hardware.
- Wood tongue-and-groove flooring.
- Plaster finish on interior walls and ceilings.
- Historic light fixtures.
- Historic plumbing fixtures.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Metal awnings over windows.
- Covered lanai roof at back.



*Exposed clipped rafters, Quarters F
Source: Mason Architects, Inc.*

- Jalousie windows.
- In-filled, covered, or painted transoms.
- Modern door, window, or cabinet hardware.
- Covering of original wood tongue-and-groove floors with carpet or resilient flooring.
- Window air conditioners.
- Modernization of kitchens and bathrooms, including the replacement of original ceramic floor tiles.
- Alteration of original closets.



Historic doors from lanai to Living Room, recently removed from Quarters F-O

Source: Mason Architects, Inc.



Kitchen entry, Quarters A

Source: David Franzen Photography, November 1994



Kitchen with historic cabinets, Quarters A

Source: Mason Architects, Inc.

Designs Similar to Those at Naval Magazine Lualualei

Ten houses at the Lualualei Radio Transmitter Facility (RTF) are located on the west side of Naval Magazine Lualualei. Facility A at RTF is of the same design as the Naval Magazine Lualualei Officers' Quarters (B–E). RTF Facility C is of the same design as the Naval Magazine Lualualei Warrant Officers' and Civilians' Quarters (F–O). One element that the Lualualei Naval Magazine houses have, that the RTF quarters lack, is a chimney. These chimneys originally served water heaters near the kitchens. The dormers on the Naval Magazine quarters appear to have been rebuilt, since they do not have shingled sides, as seen on the RTF dormers.



Original entry door with transom and sidelights, Quarters A

Source: Mason Architects, Inc.

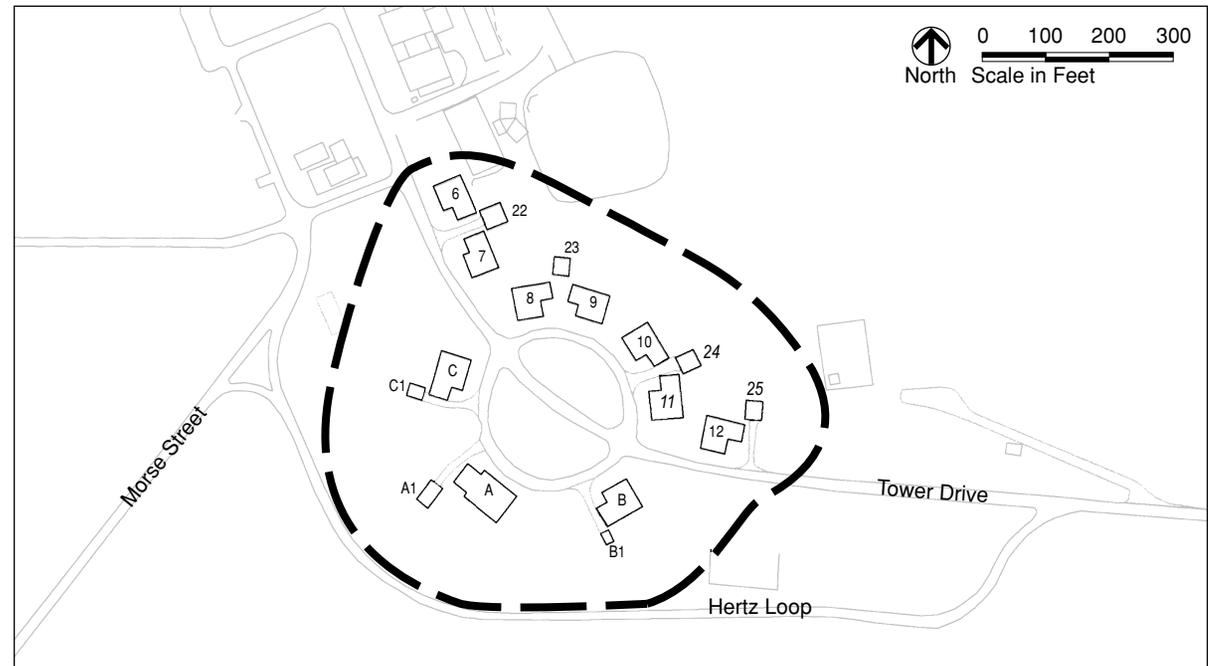
Radio Transmitting Facility (RTF) Lualualei Neighborhood Significance

Most of the structures from the original base construction in the 1930s at RTF Lualualei still remain and have retained their historic integrity. They are significant due to their association with the early development of the base and its role before and during the war as a Navy radio transmitter facility. Many structures built in the 1930s are in the Renaissance Revival style, with corner quoin details and arched openings. These buildings serve as excellent examples of the architectural style and planning used by the military at that time.

The RTF Lualualei housing maintain a unity as a historic residential area. The houses have less of the decorative elements of the Renaissance Revival style than some of the larger buildings on the base. They are relatively unaltered and serve as excellent examples of Navy housing from this period.

Neighborhood History

The history of the neighborhood and the installation is tied to developments in Navy radio communication. Shortly after invention of the wireless in the late 19th century, the Navy's radio communication system began to take form and evolved rapidly in the period between WWI and WWII. The first Navy communications station in Hawaii was activated in September 1916 at Hospital Point, Pearl Harbor. In 1920, a receiver station was constructed at Wailupe in East Honolulu. The station, capable of processing six messages simultaneously, was



RTF Lualualei neighborhood



RTF houses under construction, February 1935

Source: National Archives Still Photo Collection, Folder 71 CA 159D



Senior CPO House (Facility C), September 1935
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph #11698



Commanding Officer's House (Facility A), March 1936
Source: National Archives Still Photo Collection, #71 CA 177 F 2

6-14 considered to be one of the largest in the world. As various naval activities moved to Pearl Harbor, expansion of the Hospital Point Station became impractical. In 1931, land was purchased in Lualualei Valley for construction of a new transmitter facility, which was activated in 1936. During the initial phase of construction at RTF Lualualei from 1935–1940, the first radio transmitters and antenna, hous-

ing units, Marine barracks, and initial support facilities were built by local contractor E.E. Black.

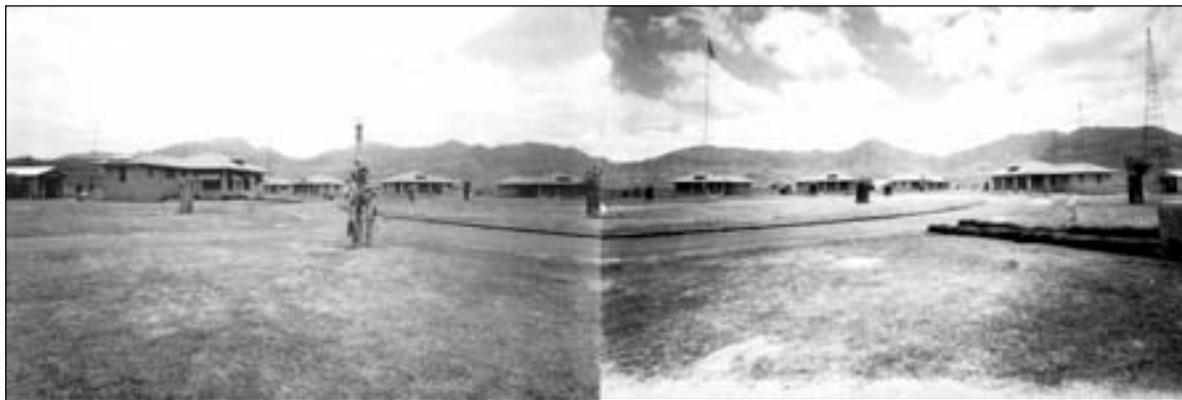
By 1940, Navy communications encompassed a far-reaching network of high, medium, and low-frequency transmitting stations capable of encircling the globe; receiving stations; and a large number of supplementary stations, including numerous installations of air-navigational aids. After the December 7, 1941, attack on Pearl Harbor, tremendous expansion took place on Oahu and the outer islands. Hawaii became a major logistics and training complex for the Pacific war, and was the Navy's front line of defense until the Battle of Midway in 1942.

At RTF Lualualei, administration and support buildings were constructed during WWII to accommodate the increase in military forces. Two multi-unit housing structures (Facilities 16 and 17) were built in 1941 adjacent to Facility B. An additional multi-unit housing structure for dependents was

built adjacent to Facility 13 (originally located adjacent to Facility 12). Many of the WWII-era buildings were temporary wood structures and have since been demolished, including the multi-unit housing structures and Facility 13.

With the outbreak of WWII and the Naval fleet expansion into the Pacific, improved radio communications became essential. When it was determined that the main Navy transmitter at Lualualei was not powerful enough for an all-ocean war, a giant transmitting station was built at Haiku Valley to reach not only to the waters of Australia and the Indian Ocean but also every submerged Allied submarine. It was commissioned in 1943.

By the time the Japanese government surrendered to the allied forces in 1945, Pearl Harbor and its affiliated Naval bases on Oahu comprised the most extensive defense installation in the world. After WWII, the construction of additional communications and support facilities at RTF Lualualei was followed by a general construction phase-down, which was temporarily suspended by the Korean War in 1950. Although some construction occurred



Panorama of RTF Lualualei Housing area, June 1937
Source: National Archives Still Photo Collection, Folder 71 CA 159C



RTF Houses, July 1937
 Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph #12298



Quarters 10, July 1937
 Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, Photograph #12282

to support the efforts in Korea, most construction work consisted of modernization or replacement of existing structures.

Following the Vietnam War, all Army, Navy, and Marine Corps high-frequency receiver facilities and part of the Air Force receiver facilities were consolidated at NCTAMS Wahiawa. Technological developments since consolidation include completion of two very low frequency (VLF) antenna towers at RTF Lualualei in 1972. These 1,500-foot-high towers were the tallest in the Pacific at the time of construction. The Naval Communications Processing and Routing System (NAVCOMPARS) was activated in 1974. A new SATCOM facility (FS-78) became operational in 1977.

RTF Lualualei was converted to contract operations in 1979, and then reverted back to the Navy in 1981. In 2000, the base was closed, and the housing units are currently unoccupied.

Major Landscape Features of Neighborhood

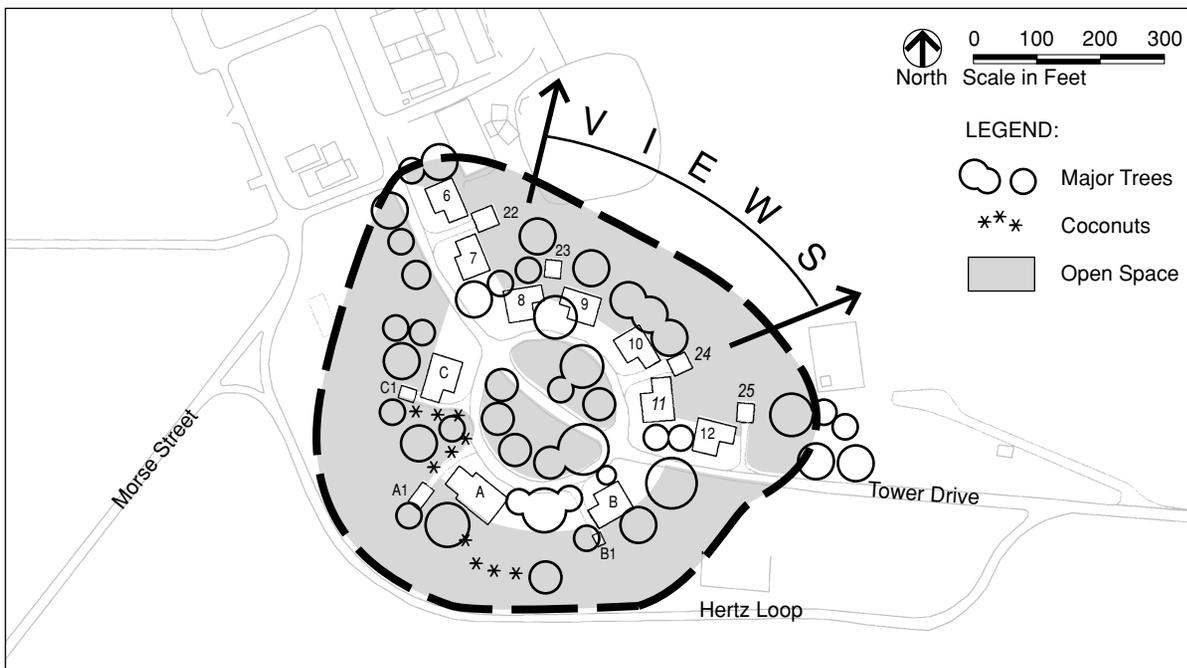
The Radio Transmitting Facility historic housing at Lualualei is located at the edge of the antenna field. This neighborhood is no longer in use and much of the landscape is in need of attention. Ten homes are located along a circular layout with Tower Drive curving to bisect the neighborhood. Units A, B, and C, at the prominent point of the curve, are larger and seem to be spaced farther apart, creating more yard space between them.

Facilities 6 through 12 on the other side of the Tower Drive are smaller units spaced closer together with less yard space between them. All these units have very little foundation planting, mainly a few accent shrubs at the entrances to the units. Large trees on the site include monkeypods, banyans, mangoes, Norfolk Island pines, and coconuts. These trees are well enough established that they can

6-15



RTF Lualualei neighborhood landscape
 Source: Belt Collins



RTF Lualualei Housing Designs

RTF Lualualei is an excellent example of a residential community constructed to support a Navy radio installation. The large amount of open space and mature landscaping greatly enhance this neighborhood. Ten houses were constructed in 1937 during the initial base development, and they have changed little since then. The houses have three different floor plans but the same architectural style and details, creating a cohesive neighborhood.

Facilities A, B, and C are spaced widely apart and sited on a circle along with Facilities 8, 9, 10, and 11. Facilities 6 and 7 are located adjacent to Facility 8 along Tower Drive, which cuts across the center of the circle. Facility 12 is located on Tower Drive adjacent to Facility 11. Facilities A, B, and C have their own garage structures, while Facilities 6–12 have double garage structures, each shared by two houses. These garages are the same as those built at Naval Magazine Lualualei.

Commanding Officer's House (Facility A)

This single-story dwelling is roughly rectangular with a smaller kitchen and servant's quarters wing extending from one side. The structure has a vented concrete foundation, concrete floor, and frame with concrete block in-fill covered with stucco. Framed with wood, the asphalt-shingled hipped roof has a hipped-roof dormer centered over the entry. In the main portion of the building are a simple concrete stair at the front entry, a large living room, three bedrooms, and two full baths. The kitchen wing has a separate entrance and contains cooking and laundry facilities, a pantry, and servant's quarters

6-16

Landscape at RTF Lualualei

survive on what little rainwater they receive. All of the open space around the dwellings is very dry, and without water, the grass has died.

Being at the edge of the antenna field, the neighborhood is surrounded by a vast open space. From a distance, it appears to be an oasis with the large trees. There are wonderful views back toward the valley. The dwellings create a central circular space that unifies the neighborhood. With better maintenance, this area could be a nice space.

Major Trees/Palms

- Monkeypod
- Banyan
- Mango
- Norfolk Island pine
- Coconut

Other Trees

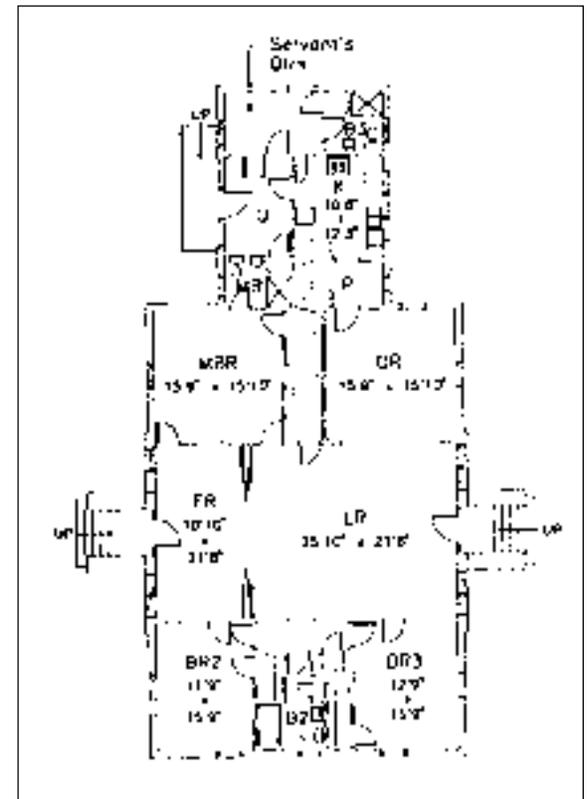
- Pink tecoma
- Plumeria
- Brassia
- African tulip
- MacArthur palm

Facility	Facility or Design Name	Similar to Facility (Neighborhood)	Date
A	Commanding Officer's Quarters	Officer's Quarters, Quarters B-E (Naval Magazine Lualualei)	1937
B, 6-12	Warrant Officer's and C.P.O. Quarters	-	1937
C	Senior C.P.O. Quarters	Warrant Officers' & Civilians' Quarters, Quarters F-O (Naval Magazine Lualualei)	1937

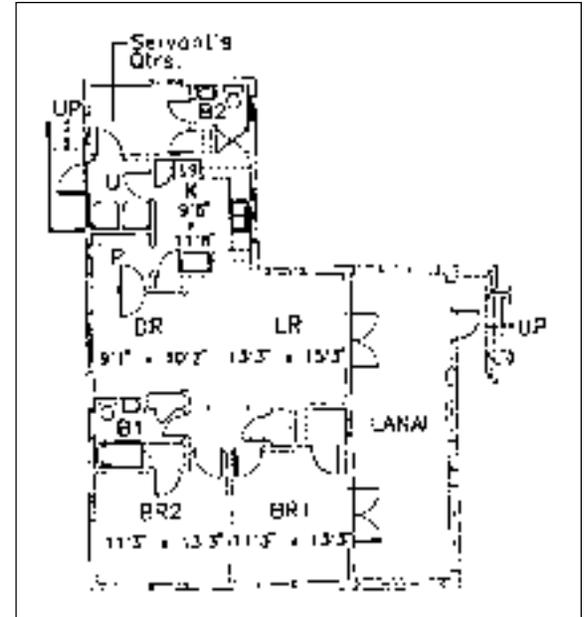
with a private bath. The original double-hung and casement windows have been retained. There appears to have been no significant alterations to the exterior of this building.



Commanding Officer's House (Facility A)
 Source: Mason Architects, Inc.



Commanding Officer's House (Facility A) floor plan



Warrant Officer's and CPO Quarters floor plan

6-18

Warrant Officer's Quarters (Facility B)

Source: Mason Architects, Inc.

Warrant Officer's and CPO Quarters (Facilities B, 6 to 12)

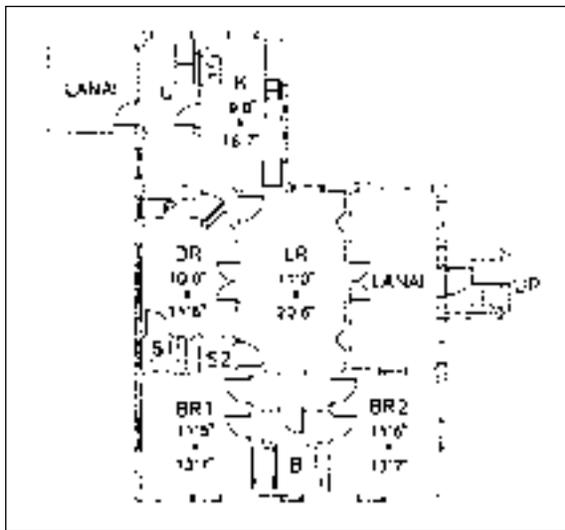
These one-story single-family units are clustered in pairs along a residential loop. Quarters B is the Warrant Officer's house, adjacent to the Commanding Officer's House (Quarters A), and is not paired with another structure. The CPO Quarters are all on the other side of Tower Drive from the

top officers' houses, and have the same design as Quarters B. Each L-shaped unit has a floor area of 1,098 square feet. The buildings are of concrete frame construction with concrete block in-fill covered with stucco. They have asphalt-shingled hipped roofs with hipped dormer roof vents. Each house has an enclosed entry lanai, living room/dining

room, two bedrooms, and a bathroom. The kitchen wing contains a separate entry, cooking and laundry facilities, pantry, and servants quarters with private bath. The homes have their original wood double-hung windows, but in some cases the screened openings at the entry lanai have been covered with sheet plastic.

Senior CPO Quarters (Facility C)

This one-story bungalow-style, single-family house is located adjacent to the Commanding Officer's house, across a grassy circle from the CPO housing row. The L-shaped unit has a floor area of 1,461 square feet. It has a vented concrete foundation, concrete floors, and concrete frame construction with concrete block in-fill covered with stucco. The asphalt-shingled hipped roof has a hipped-dormer roof vent centered over the entry and another dormer vent at the rear. The house has an enclosed entry lanai, living room, dining room, two bedrooms with a shared bath, kitchen, pantry, and alcove. Original wood double-hung windows appear to have been relatively unaltered on the exterior and retain their historic character.



Senior CPO Quarters (Facility C) floor plan [plan was reversed when built]



Senior CPO Quarters (Facility C)
 Source: Mason Architects, Inc.

6-19

CHARACTER-DEFINING FEATURES OF RTF LUALUALEI HOUSING

Exterior Features:

- Concrete front steps with low cheekwalls.
- Concrete block walls with stucco finish.
- Concrete perimeter-wall foundation.
- Wood roof structure.
- Roof dormers and ventilating ridge.
- Exposed wood sheathing at eaves.
- Exposed clipped rafter ends.
- Shingle roofing.
- Columns with accentuated capital and base at front entryway.
- Recessed concrete panel detail below entryway windows at Quarters A.

- Hopper transoms at front and rear entry doors.
- Wood panel doors with glazing.
- Wood casement windows.
- Wood double-hung six-over-six-light windows.
- Heavy concrete sill at windows.

Interior Features:

- Multi-light double-hinged and sliding pocket doors between living room and lanai at Quarters A.
- Bi-fold, 10-light doors flanking 10-light double doors between living room and lanai at Quarters C.
- Double 15-light doors between living room and lanai at most houses.
- Door transoms.



*Original French doors with transom and two-panel doors, Facility 12
Source: Mason Architects, Inc.*

- Two-panel wood interior doors.
- Historic door and window hardware.
- Wood tongue-and-groove flooring.
- Tongue-and-groove ceiling at lanai.
- Original cabinets and hardware.
- Plaster finish on interior walls and ceilings.
- Un-cased openings with rounded corners between some rooms.
- Historic light fixtures.
- Historic plumbing fixtures.
- Historic bathroom tile.
- Historic shower with concrete floor in servant's quarters.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie windows.
- In-filled or covered transoms.

- Modern door, window, or cabinet hardware.
- Covering of original wood tongue-and-groove floors with carpet or resilient flooring.
- Window air conditioners.
- Modernization of kitchens and bathrooms, including the replacement of original ceramic floor tiles.
- Alteration of original closets.



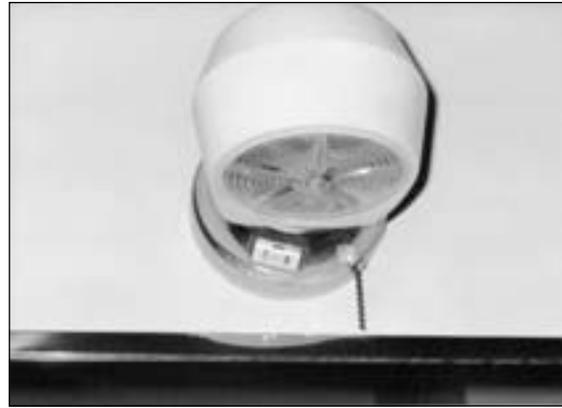
*Original cabinets in Pantry, Facility 12
Source: Mason Architects, Inc.*



*Clipped rafters and open eave, Facility 12
Source: Mason Architects, Inc.*



Historic plumbing fixtures and tile, Facility 8
Source: Mason Architects, Inc.



Historic light fixture, Facility 12
Source: Mason Architects, Inc.

Designs Similar to Those at RTF Lualualei

Fourteen houses at Naval Magazine Lualualei are located on the west side of RTF Lualualei. Quarters A at RTF is the same design as the Naval Magazine Lualualei Officers' Quarters (B–E). RTF Quarters C is the same design as the Naval Magazine Lualualei Warrant Officers' and Civilians' Quarters (F–O). Quarters B, (the Warrant Officer's Quarters), and Quarters 6–12 (CPO Quarters) at RTF are very similar in design to the Lualualei Warrant Officers' and Civilians' Quarters (and to RTF Quarters C). They are all about the same size in floor area but have some differences in layout. Both designs are L-shaped, but the design of RTF Quarters B and 6–12 has a lanai that spans the entire front of the main portion of the house. The bathroom is located at the back rather than the side of the house, and it has a smaller living room and maid's quarters with a bathroom at the end of the kitchen wing.

6-21

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

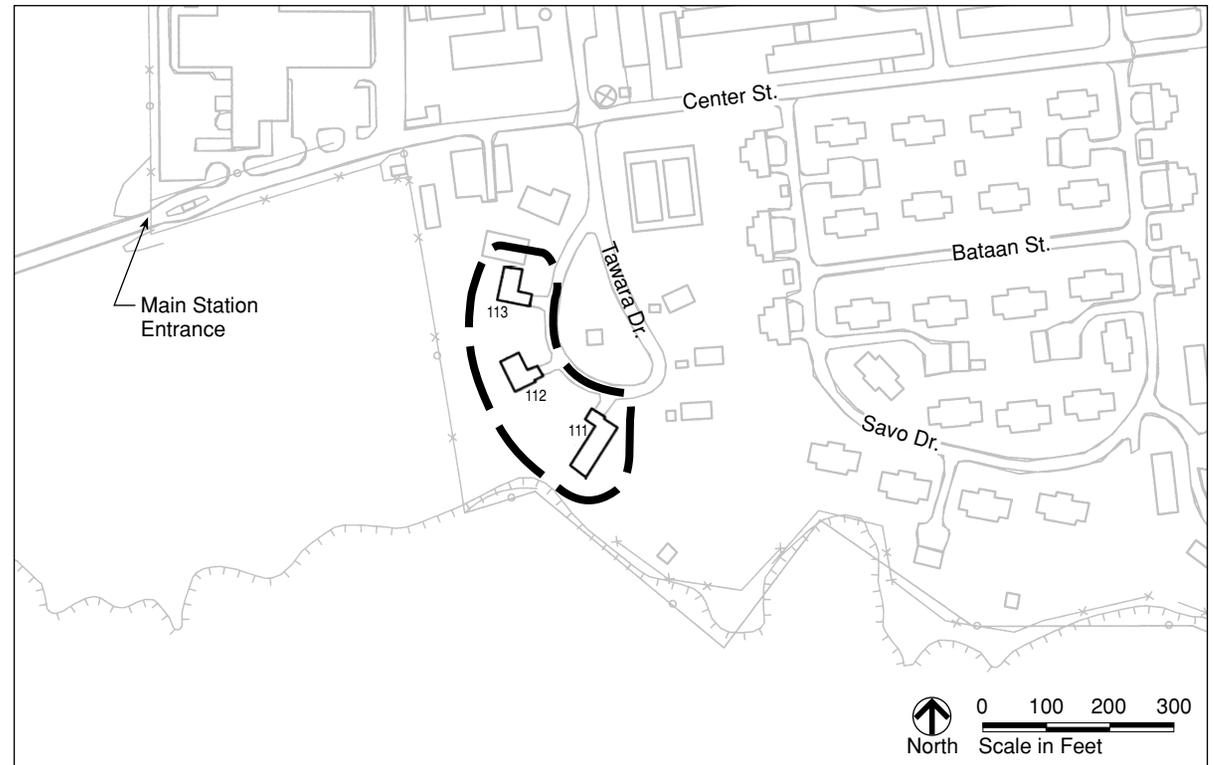
Naval Computer and Telecommunications Area Master Station, Pacific (NCTAMS PAC) Neighborhood Significance

These three officers' quarters (Facilities 111, 112, and 113) on Tarawa Drive are the least altered of the 1941 houses on this installation. Originally, the historic neighborhood included 27 duplex buildings (Facilities 31–57) along Bataan Street and Savo Drive. The NCTAMS PAC neighborhood is significant for its association with Navy radio communications history in Hawaii and for the architecture of the quarters. C.W. Dickey, a noted Hawaii architect, designed the houses and the duplexes. In 1999, all of the duplexes were gutted, totally rebuilt inside, and added to. The three officers' houses at NCTAMS PAC are similar to the ones in the Makalapa neighborhood, also designed by C.W. Dickey.

History of NCTAMS PAC Neighborhood and Installation

The history of this neighborhood and installation is associated with Navy radio history. The early history was given in the preceding section on Radio Transmitting Facility (RTF) Lualualei. Only the specific history of the Navy's radio station in Wahiawa is given below.

By 1940, naval communications encompassed a far-reaching network of transmitting and receiving stations, including other installations such as air-navigational aids (U.S. Navy, Bureau of Yards and



NCTAMS PAC neighborhood

Docks, 1947: 401). Once WWII started in Europe and the Navy fleet expanded into the Pacific, improved radio communications assumed greater importance. Hawaii was the main link in the naval communication chain between Washington headquarters and the fleet in the Pacific. The Navy had a receiving station at Wailupe in the east Honolulu shoreline. A new location for a radio receiving station closer to Pearl Harbor was originally planned

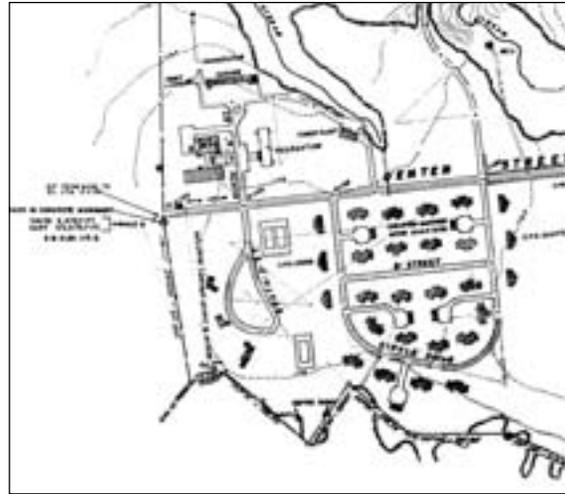
(Contractors Pacific Naval Air Bases n.d.: A-850), but a site on high ground north of Wahiawa was selected. The land purchased by the Navy was former pineapple fields, fairly level but dissected by gulches. Contractors Pacific Naval Air Bases (CPNAB) built one of the world's largest radio installations for the Navy on this site (Coletta 1985: 457). The project manager overseeing the construction here, was Lt. Commander Robert M. Belt, who later co-

founded Belt Collins & Associates, a notable engineering and planning firm in Hawaii.

Almost at the center of the island, the Contractors were ordered to build a huge new radio station. A mile or so back of the village of Wahiawa the land swelled to a level hilltop—the highest ground for several miles. Wahiawa was to be the main receiving unit for the Pacific fleet—capable of picking up messages from the farthest corner of the ocean.

. . . The layout was as complete as if the station had been on an empty Pacific atoll. Besides all necessary living quarters for several hundred men, there would be various operations buildings, garages, shops, a cold-storage plant, tennis courts and recreation hall, several miles of roads, sewers, and water lines. The main operations building and power plant were to be bomb-proofed . . .

The radio installation itself was to be as large as any in the world. A forest of wooden poles ranging in a complicated pattern over half a square mile of ground would support a grid of copper strands that could intercept signals no matter how weak from every direction. At the center all wires would be gathered together into cables and led to a vault deep under ground, where the receiving instruments would be protected from any possible bombing raid (Woodbury, 1946: 172-173).



U.S. Naval Radio Station, Wahiawa, c. 1941
Source: Pacific Division Naval Facilities Engineering Command Plan Files, Drawing No. 04895



U.S. Naval Radio Station, Wahiawa, March 3, 1945
Source: Pacific Division Naval Facilities Engineering Command Plan Files, Drawing No. OA-NI-1254

Base construction, begun in 1940 in anticipation of the war, was originally scheduled for completion in 1942. After the attack on Pearl Harbor, construction was expedited and the relocation of receiving functions from Wailupe to Wahiawa was completed on December 17, 1941.

The station at Wahiawa was the radio headquarters. It was here that the “keying” or actual message-sending was done, although the transmission was from either Haiku or Lualualei. In 1943, the Communications Security Unit was established at Wahiawa under the Chief of Naval Operations



Naval Radio Station Wahiawa housing, view from Operations Building, June 11, 1941
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection

to assist in cryptographic security, traffic control, and analysis. Following WWII, the central radio station was returned to Pearl Harbor and Wahiawa was downgraded to a receiver site. However, in 1956, the central station was relocated back to Wahiawa. The installation's name changed over the years from Wahiawa Naval Radio Station, then Naval Communications Area Master Station, Eastern Pacific (NAVCAMS EASTPAC), to its current name, Naval Computer and Telecommunications Area Master Station, Pacific (NCTAMS PAC).

Completion of the Communications Center (Facility 261) in 1960 consolidated all communications command functions. New communications technology rapidly evolved during this period. In 1967, the Automatic Digital Network (AUTODIN) system was activated.

In 1970, the Deputy Secretary of Defense directed the Navy to study the consolidation of Army, Air Force, Navy, and Marine Corps high frequency (HF) radio communications facilities at the Navy

radio installation in Wahiawa. Implementation of subsequent consolidation plans resulted in the location of all Army, Navy, and Marine Corps HF receiver facilities, and part of the Air Force receiver facilities, at the Wahiawa base.



One of the one-story duplexes at Naval Radio Station Wahiawa, undated but c. 1942

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection

Before WWII, conservation of critical materials was not a consideration in the design and construction of housing and other early buildings at this installation. The housing designs are by the same architect, C.W. Dickey, who designed the Makalapa housing at Pearl Harbor. Houses in the two neighborhoods are similar; one main difference is that the houses in Wahiawa, because of the cooler climate at the higher elevation, required fireplaces, which the Makalapa houses do not have. The housing was completed by October 1941, according to the CPNAB report, although the Navy database lists the houses with 1942 dates and the duplexes with 1943 dates. The 1941 housing included three two-story, single-family houses for officers, six two-story duplexes for CPOs, and 21 one-story duplexes for

6-25



One of the two-story duplexes at Naval Radio Station Wahiawa, undated but c. 1942

Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection



Naval Radio Station Wahiawa housing, view from Operations Building, February 10, 1942

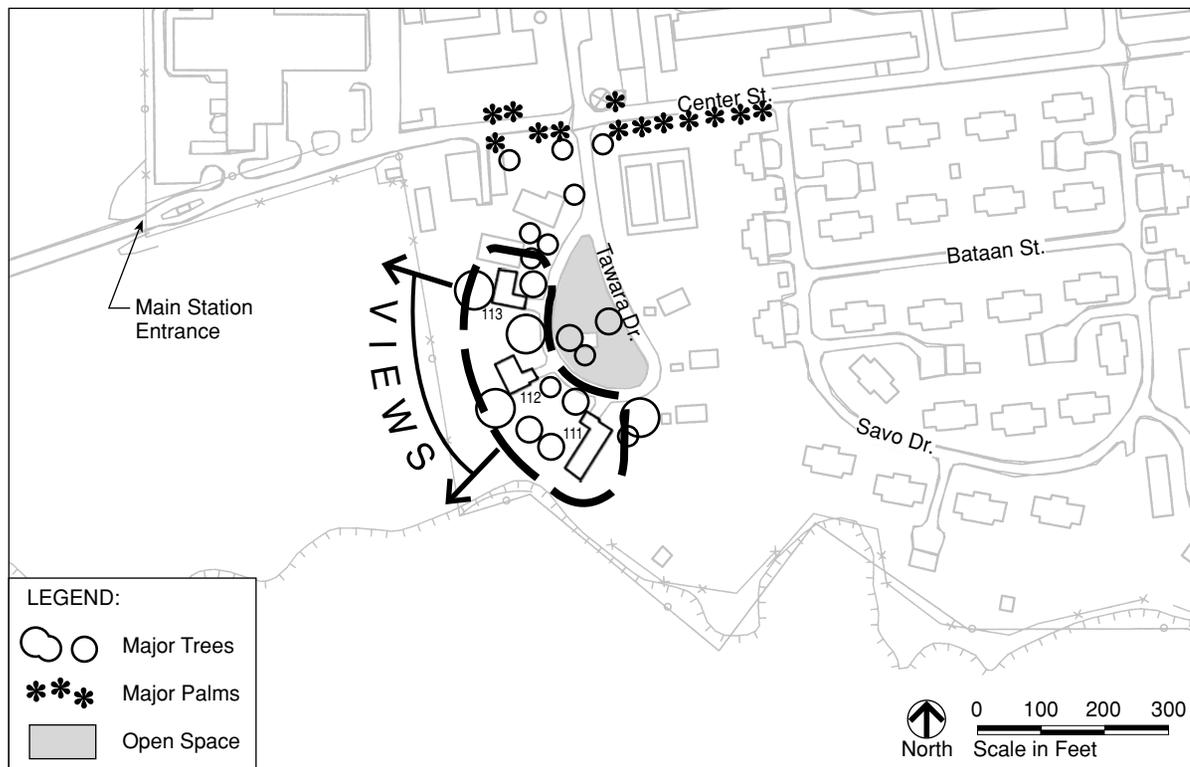
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection

enlisted men. A building adjacent to Facility 113, built before 1945, is labeled as Facility 114 on a 1951 map. It was built as a Bachelor Officers' Quarters but is no longer used for housing.

The NCTAMS PAC neighborhood has undergone some changes since WWII, including re-naming of the streets after locations of Pacific battles. Originally Tarawa Drive was A Street, Bataan Street was B Street, and Savo Drive was Circle Drive. In 1951, an Officers' Mess (Facility 227) was built at the intersection of Tarawa Drive and Center Street. This later became the Officers' Club, and Facility 114 became an annex to the club. Facility 227 has recently been used as a gymnasium and Facility 114 as offices. In 1965, three houses were built on Tarawa Drive between the officers' houses and the duplexes, as well as six more duplexes and 17 four-plexes on the east side of the 1941 duplexes. All of the 1941 duplexes were entirely rebuilt around 1999. Only the three officers' quarters retain significant historic characteristics, with Facility 111 having the highest integrity.

Major Landscape Features of Neighborhood

NCTAMS has a small historic neighborhood consisting of three homes. These three homes represent half of the neighborhood around Tarawa Drive, a small loop road just past the main gate. The looping of Tarawa Drive creates a small park-like space that centrally organizes the neighborhood. Being at a higher elevation, the neighborhood has tremendous views back across central Oahu to the Waianae Mountain Range.



Landscape at NCTAMS PAC neighborhood

Center Street, just off Tarawa Drive, is lined with a formal row of royal palms. The neighborhood borders a natural forest area, so there is a natural boundary with mature trees. Within the neighborhood, the homes are set back far enough from the street to provide a landscaped front yard, which seems to be an extension of the central open space. The well-landscaped homes are spaced far enough away from each other for large trees to grow unre-

stricted. Large albizzia, banyan, jacaranda, and Norfolk Island pine are scattered around the home, providing shade and creating a park-like setting for this neighborhood.

Adjacent to the neighborhood is a small tennis court/recreation area, which seems to be a shared site amenity with the adjacent neighborhood to the north.



NCTAMS PAC neighborhood landscape
 Source: Belt Collins

Major Trees/Palms

- Albizzia
- Monkeypod
- Banyan
- Jacaranda
- Norfolk Island pine

Other Trees

- Plumeria
- Brassia
- Shower tree

NCTAMS PAC Housing Designs

The historic residences in this neighborhood are now limited to the three houses on Tarawa Drive, the loop road near the entrance to the installation. They are all two-story residences designed by C.W. Dickey, with two slightly different designs. The house of the installation's commanding officer

Facility #	Address	Facility or Design Name	Date
111	A Tarawa Drive	Senior Officer's Quarters	1941
112 & 113	B & C Tarawa Drive	Junior Officers' Quarters Design	1941

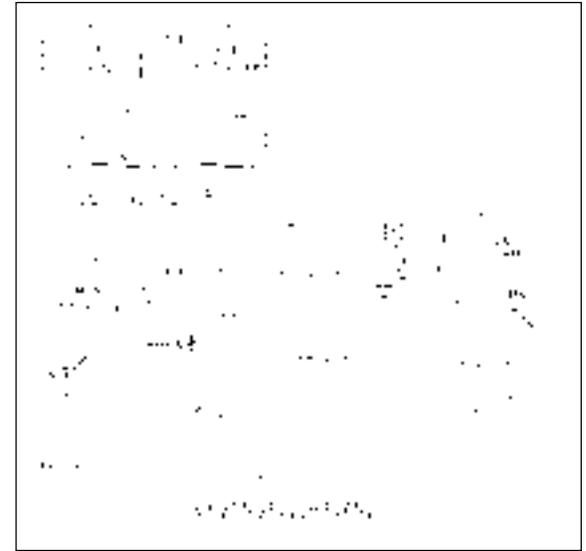
(Facility 111), labeled as Senior Officer Quarters on the original plans, originally had more features and presently has more intact features than the other two houses for Junior Officers (Facilities 112 and 113). The original clay tile roofing on all three houses has been replaced by asphalt shingles. Plans dated 1977 show some alterations that were done to Facility 112 and 113, but there are no drawings on file for other alterations to those houses. In Facility 111, only the bathrooms, kitchen, family room, and a first-floor bedroom have been obviously altered. The completion year in the CPNAB report, rather than the 1942 date in the Navy database, is given below.

Commanding Officer's Quarters (Facility 111)

The layout of this house is similar to the Senior Officers' Quarters at the Makalapa neighborhood in the Pearl Harbor Complex. This Wahiawa house has a chimney/fireplace and attached carport, which the Makalapa houses do not. There are several other minor design differences. Only some of the original 1941 drawings were found on microfilm at Plan Files, including a few detail sheets and the electrical and plumbing layouts. A drawing of the 1972 alterations to the bathrooms and kitchen



6-28



Facility 111 floor plans

Commanding Officer's Quarters (Facility 111) in 1993
Source: Mason Architects, Inc.

is on file, but no drawings were found for other changes to the house. For instance, the terrace was enclosed with screens in 1941, soon after the house was finished. Sliding windows replaced the screens, probably soon after WWII. The aluminum-frame sliding doors, ceramic tile floor, and other changes to the enclosed terrace (now a family room), such as the dropped ceiling soffit, appear to be more recent.

CHARACTER-DEFINING FEATURES OF FACILITY 111

Exterior Features:

- Two-story, single-family house with one-story sections.
- Complex hip roofs at upper and lower levels.
- Pent roof at side and rear of house connecting to lower roof sections.

- Decorative paired wood brackets at pent roof along side.
- Concrete perimeter wall foundation with rectangular openings; interior concrete foundation piers.
- Wood floor and roof framing.
- Concrete block walls with stucco finish at lower floor; drop siding at upper floor.
- Exposed rafters with tapered ends covered by thin fascia.
- Tongue-and-groove eaves sheathing.
- Concrete brick chimney with concrete cap on four concrete brick pedestals above shaft.
- Main entry porch with concrete steps and wood handrails and posts.



Lath-enclosed porch at rear of Facility 111
 Source: Mason Architects, Inc.

- Lath-enclosed wooden porch with one rounded corner at rear entry.
- Concrete brick window sills.
- Windows mostly one-over-one-light double-hung.
- Living room and enclosed lanai with three-light sliding windows.
- Some high one-light sliding windows in bedrooms.
- Hopper windows, some with textured glass.
- Wood window screens with narrow half-round moldings.
- Front entry door with three lights over one panel and original lever handles.
- Similar door and hardware (but two lights over one panel) in corner of family room.
- Nautical light fixtures flanking front door.

- Unusual rear entry door with fixed and sliding lights over two lower panels.
- Grid-like trellis walls of attached carport.



Nautical light fixtures at entry of Facility 111
 Source: Mason Architects, Inc.

Interior Features:

- Grey brick fireplace with buff brick hearth and plain wood mantel.
- Quarter-round bookshelves built next to fireplace.
- Pair of large 16-panel sliding pocket doors between living room and dining room.
- Three-light over one-panel sliding doors between living room and terrace/family room.
- One mirrored panel door.

- Paired flush by-pass closet doors typical.
- Louvered closet door in kitchen.
- Scored wood curtain valances at many windows.
- Wood (oak) floors throughout.
- Painted wood base with unpainted quarter-round trim.
- Crown molding at most wall/ceiling intersections.
- Most walls of plywood or masonite panels.
- Sloping section(s) of ceilings in all second-floor rooms, reflecting exterior roof form and allowing higher main ceiling section.
- Wood treads, wood-capped solid rail, and wood handrail at interior stair.
- Extended bottom step of stair.



Fireplace and quarter-circle bookshelves, Facility 111
 Source: Mason Architects, Inc.



Sliding doors between living and dining rooms in Facility 111
Source: Mason Architects, Inc.



Entry door and hallway, showing wood floors and interior stair,
Facility 111
Source: Mason Architects, Inc.

Junior Officers' Quarters Design (Facilities 112 and 113)

The layout of these two houses is similar to the Junior Officers' Quarters (Type I) at Makalapa. There are three varieties of Type I houses at Makalapa; these Wahiawa houses are most similar to variety 1, but like variety 3, they have an attached carport. The main difference between the Wahiawa and Makalapa houses is that the former have a chimney/fireplace which the Makalapa houses do not. Other minor design differences include the first-floor walls of concrete tile at Wahiawa and of concrete brick at Makalapa. Only some of the original 1941 drawings for these houses were found on microfilm at Plan Files, including a few detail sheets and the plumbing layout. Drawings of the 1977 alterations are on file, but no drawings were found for 1999 changes to the houses.

CHARACTER-DEFINING FEATURES OF JUNIOR OFFICERS' QUARTERS

Exterior Features:

- Two-story, single-family house.
- Hip roofs at main house, carport, and entry porch.
- Concrete perimeter wall foundation with rectangular openings; interior concrete foundation piers.
- Wood floor and roof framing.
- Concrete block walls with stucco finish at exterior of lower floor; drop siding at upper floor.
- Exposed rafters with tapered ends covered by thin fascia.

6-30

- Built-in dressers in upstairs bedroom and lower floor master bedroom vestibule.
- Chandelier in dining room.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Some new gypsum board ceilings.
- Sliding windows at interior of first-floor bedroom (now office) boarded over.
- Paneling in this office.
- Low-slope built-up roof and aluminum-frame sliding doors enclosing original open terrace to create family room.
- Dropped ceiling soffit in family room.
- Ceramic tile floor in family room.
- Wood window screens not aligned with muntins in some family room windows.

- Vinyl floors in kitchen, laundry, servant's bedroom and bath.
- Modernized bathrooms and kitchen.
- Modern light fixtures.
- Flush hollow-core doors.
- Modern hardware.
- Jalousie windows.



Junior Officers' Quarters (Facility 112) in 1993
Source: Mason Architects, Inc.

- Tongue-and-groove eaves sheathing.
- Concrete brick chimney shaft at end elevation with concrete cap on four concrete brick pedestals above it.
- Concrete ledge between floor levels around house, except at carport roof and its extensions.
- Side and front porches with concrete landing and steps, wood posts, and X-braced wood railing.
- Concrete brick window sills on first-floor windows.
- Some original sliding windows.



Facility 112 first floor plan (above) and second floor plan (below)



Original windows next to chimney, Junior Officers' Quarters design

Source: Mason Architects, Inc.

6-32

- Wood window casings.
- Grid-like trellis wall on one side of carport.

Interior Features:

- Fireplace with brick hearth and surround, and with wood mantel.
- Masonite or plywood panels on walls with beveled joints.
- Some canec panels on ceilings.
- Simple moldings at ceiling and floor intersections.
- Built-in ironing board (Facility 112).
- Built-in bench and shelves in bathroom (Facility 112).
- Built-in dresser in maid's room closet (Facility 112).

- Wood treads, wood-capped solid rail, and wood handrail at stair.
- Five-panel wood doors at bedrooms and baths.
- A one-panel door at upstairs hall closet (Facility 112).

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Jalousie windows.
- Aluminum door and window frames.
- Grid-like trellis replaced by plywood storage cabinets in carport.
- Vinyl flooring throughout.
- New (remodeled) kitchen and bathrooms.
- Modern light fixtures.
- Bi-fold closet doors.
- Concrete fireplace mantel (Facility 113).



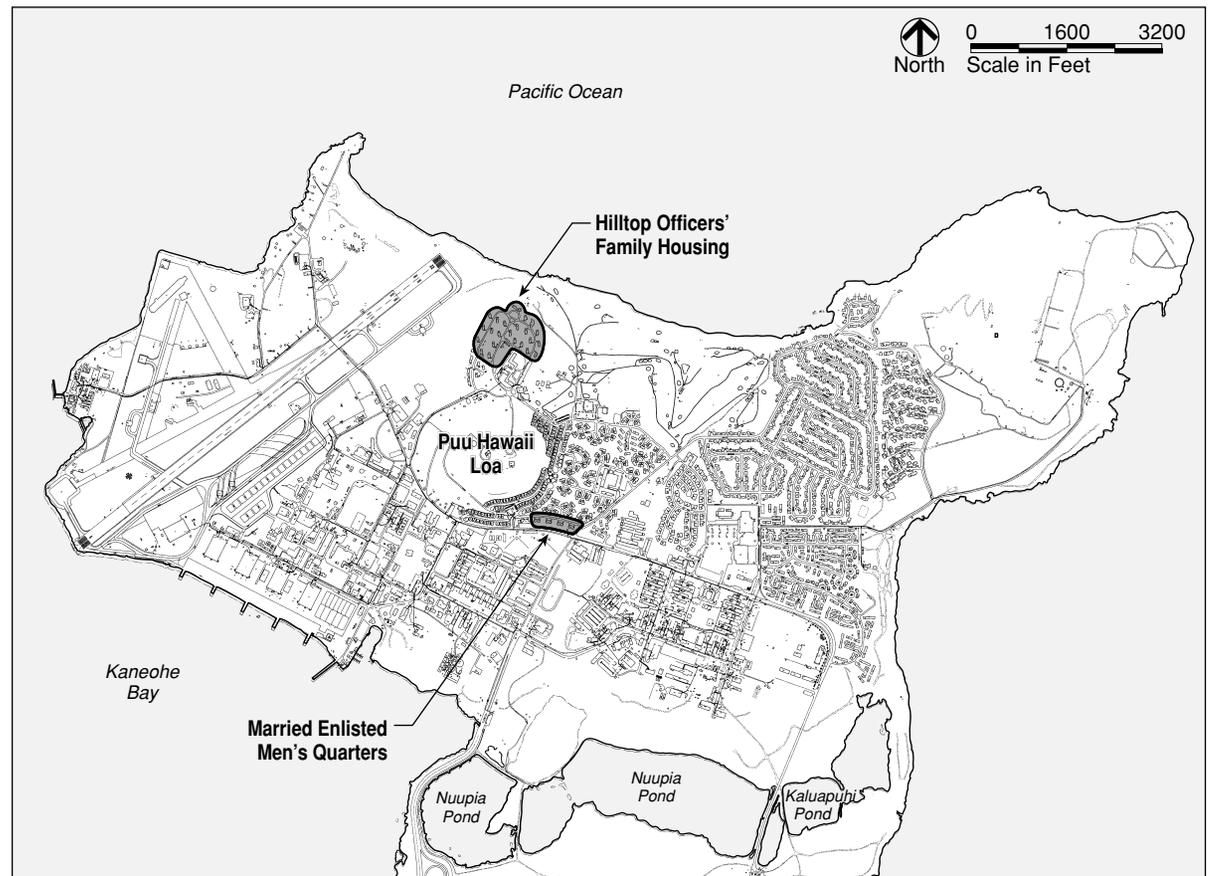
Fireplace, Junior Officers' Quarters design (Facility 112)

Source: Mason Architects, Inc.

Chapter 7

Historic Neighborhoods: Marine Corps

Marine Corps Base Hawaii (MCBH) Kaneohe Bay is the only Marine Corps installation on Oahu with historic housing. The historic houses were originally built in 1941 by the Navy as part of Naval Air Station Kaneohe Bay. The officers' and enlisted men's housing can be considered one neighborhood, although new residences now separate the two WWII housing areas. The history and significance of 1941 housing at Kaneohe Bay must be viewed in the context of the military installations on Mokapu Peninsula.



Marine Corps Base Hawaii vicinity map

HISTORIC CONTEXT STUDY
OF HISTORIC MILITARY FAMILY HOUSING IN HAWAII

Marine Corps Base Hawaii Neighborhood Significance

MCBH Kaneohe Bay is significant for several reasons. First, several of the original buildings on the base, including the hangars, were designed by noted American architect Albert Kahn, who was best known for his work with concrete industrial structures. The original plan of the installation allowed for an unusual amount of open space, which the buildings were sited around. Much of this space still remains open today. In addition, most of the original 1940–1941 structures embody “International Style” characteristics: concrete construction, horizontal bands of windows, and thin horizontal sunshades. Together, the buildings and the well-planned open spaces create a cohesive center to the base.

The most significant aspect of MCBH Kaneohe Bay is its association with WWII. The base was among the first to be hit during the Japanese bombing on December 7, 1941. Facilities on the peninsula were greatly expanded and many buildings were built in reaction to the attack, including two batteries and many magazines and storehouses. Many of these 1942–1945 structures still exist today.

Neighborhood and Base History

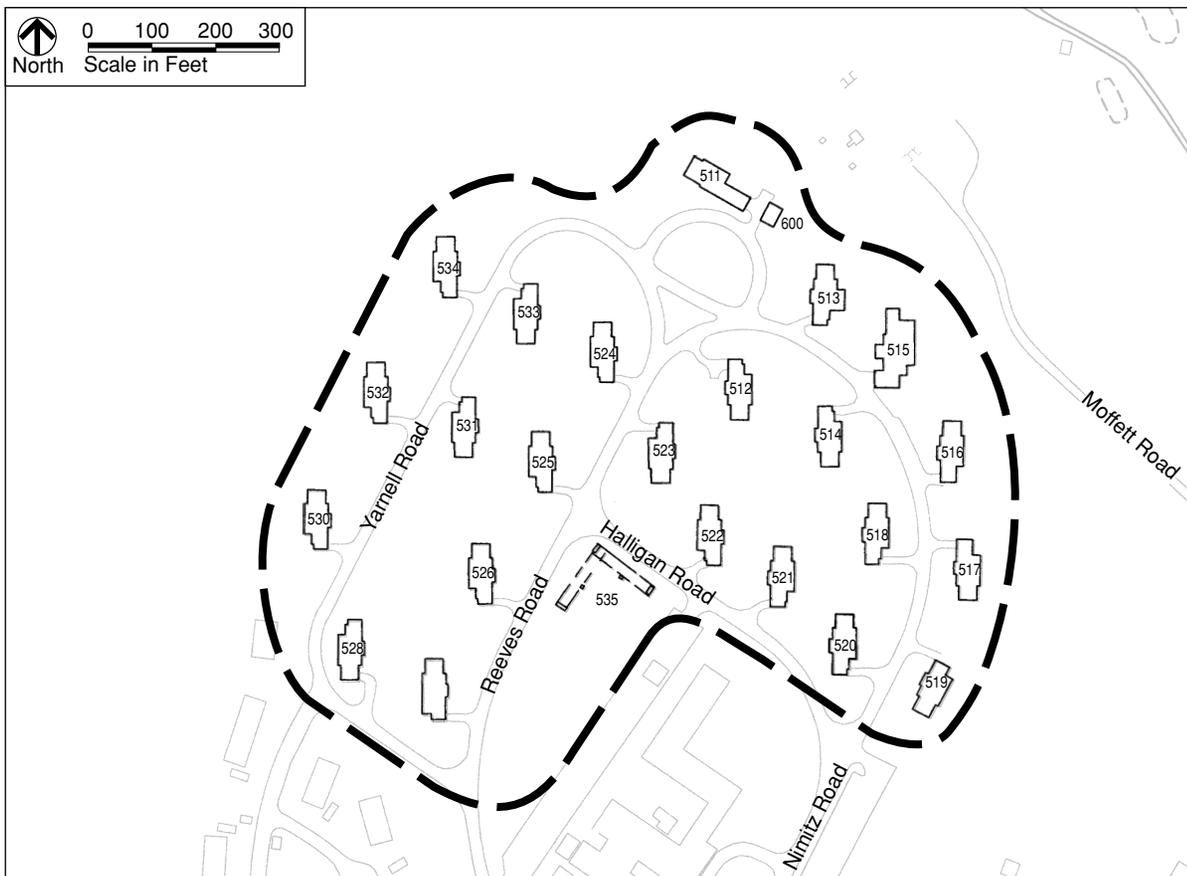
President Woodrow Wilson first designated land for military use on the Mokapu Peninsula in 1918. On the eastern side of the peninsula, 322 acres set aside for the U.S. Army were referred to as Fort Kuwaaohē, Camp Kuwaaohē, or Kuwaaohē Military Reservation. Not much is known about the



Kaneohe Naval Air Station, April 15, 1941
Source: National Archives Still Photo Division, #80-CF-7974-1

facilities or activities during these early years of military ownership. The first purchase by the U.S. Navy on the western side of the peninsula was in 1939, and by 1941 the military had acquired nearly the entire peninsula.

Construction of Naval Air Station (NAS) Kaneohe Bay began on the western side of Mokapu Peninsula on September 5, 1939, as part of the strengthening of the U.S. military presence in the Pacific. It was originally planned as a seaplane base to



Hilltop Officers' Family Housing neighborhood

include five squadrons of seaplanes plus the facilities to support them. Contractors Pacific Naval Air Bases (CPNAB) did the initial NAS Kaneohe Bay construction. Their largest undertaking, the dredging of the bay, continued incessantly until it was completed in 1943. Major construction of the ini-

tial part of the base was completed late in 1941. By that time, an airstrip, housing, gasoline storage facilities, and maintenance buildings had been built. Navy control of the air and water around base was expanded in 1941 by President Franklin D. Roosevelt's orders establishing the Kaneohe Bay



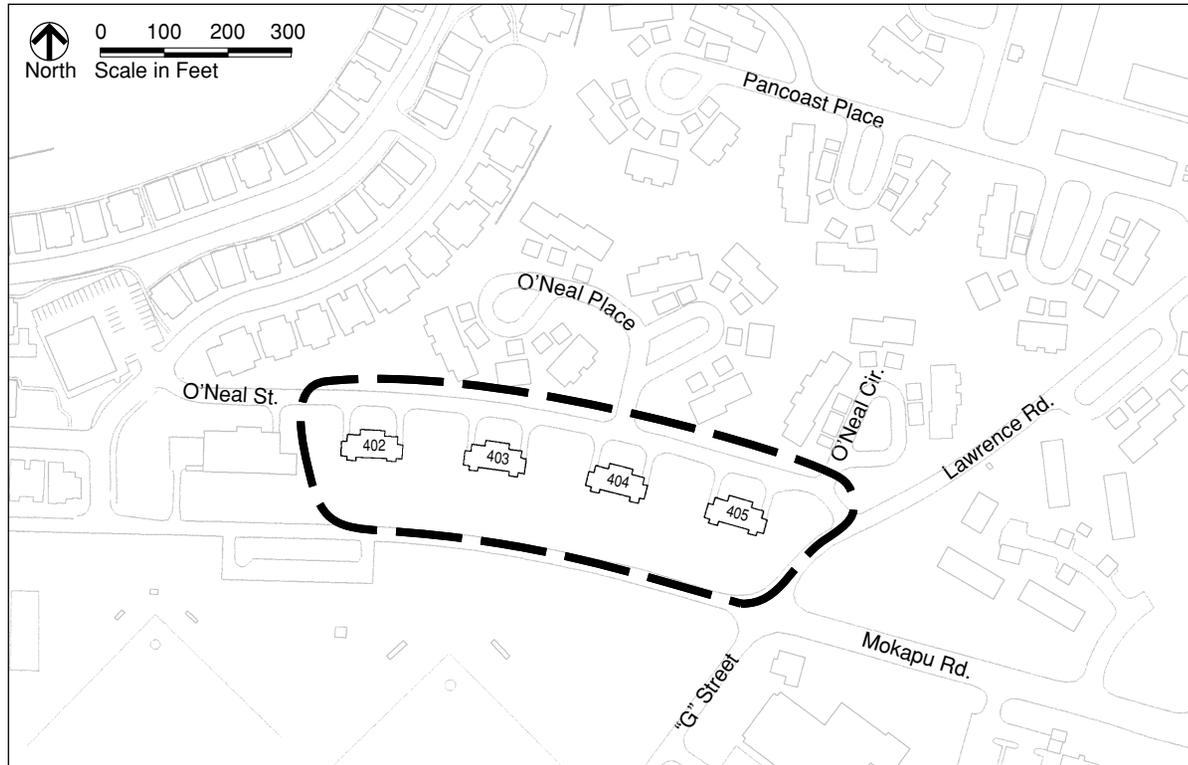
Mounted Marines in front of stables in Kaneohe, c. 1941
Source: Marine Corps Air Station Kaneohe, AV Center

Naval Defense Sea Area and the Kaneohe Bay Naval Air Space Reservation. Camp Kuwaaohē was commissioned in 1941 as Camp Ulupau, still under the direction of the Army.

The toll from the December 7, 1941, Japanese air raid was 19 dead, 67 wounded, one hangar burned to the ground, and all but three Navy planes destroyed. One Japanese plane was shot down, crashing into the hill where Kansas Tower stands.



Commanding Officer's Quarters, September 1941
Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, PHOG 14541



Married Enlisted Men's Quarters, September 1941
 Source: National Park Service, USS Arizona Memorial, 14th Naval District Photographic Collection, PHOG 14539

After the Battle of Midway in June 1942, the forward areas moved west to other Pacific islands, and the role of bases in Hawaii became focused on supply, repair, and training. NAS Kaneohe Bay provided those services for aviation-related units. The Fleet Gunnery School, “the largest gunfire school in the Pacific,” trained thousands of Navy gunners (Steele 1963: 53). The Instrument Flying Center was the main combat training center at NAS Kaneohe Bay for Navy and Marine aviators.

The Army installation, previously Camp Ulupau, was renamed Fort Hase in 1942. It was never as permanent as the NAS side of the peninsula. Historic photos show predominantly tents and wooden structures, even in August 1945. After the war, Fort Hase was rapidly vacated.

In 1949, NAS Kaneohe Bay was decommissioned, and the Navy made the land available for lease. All equipment and furniture on the base was moved to NAS Barber's Point on the western side of Oahu, and the personnel at Kaneohe was significantly reduced.

Married Enlisted Men's Quarters



Senior Officers' Quarters, September 1941
 Source: National Park Service, USS Arizona Memorial, from 14th Naval District Photographic Collection, PHOG 14540

After this date, the base was quickly expanded. Post-attack construction included many splinterproof and bombproof structures, the two main gun mounts, Battery Pennsylvania and Battery French, and more living quarters.

By 1943, when Navy Seabees arrived to take over the base construction, the air station included 2,266 acres. In 1944, a second runway was built. Most major construction of the base under the direction of the Navy was completed by 1945.

7-5



Kaneohe Naval Air Station, January 17, 1943
Source: National Archives Still Photo Division, #80 CF7974-28779-14

On January 15, 1952, the base came to life again this time under the direction of the Marine Corps. Commissioned as Marine Corps Air Station Kaneohe, it included the eastern portion of the peninsula formerly known as Fort Hase.

Today the base is known as Marine Corps Base Hawaii Kaneohe Bay. The original five hangars are home to Navy surveillance plane and Marine helicopter squadrons.



Kaneohe Naval Air Station, April 15, 1951
Source: Pacific Division Naval Facilities Engineering Command, Plan Files, Dwg No. 1311734

Major Landscape Features of Neighborhood

The Married Enlisted Men's Quarters is located along O'Neal Street parallel to Mokapu Road. Unifying landscape elements include the large *milo* street trees and front yard setbacks. The buildings' setbacks and spacing between each house create large front and side yards. At the back edge of the neighborhood, monkeypod and pink tecoma street trees are found within a grassed open space on Mokapu Road. Across Mokapu Road are community recreational facilities.

The building foundation plantings are quite simple with a few plumeria trees and screening hedges in the back yards.

From the northwest corner of the neighborhood is a view back across the recreation area to the Koolau Mountain Range.

Major Trees/Palms

- Monkeypod
- Milo
- Norfolk Island pine

Other Trees/Palms

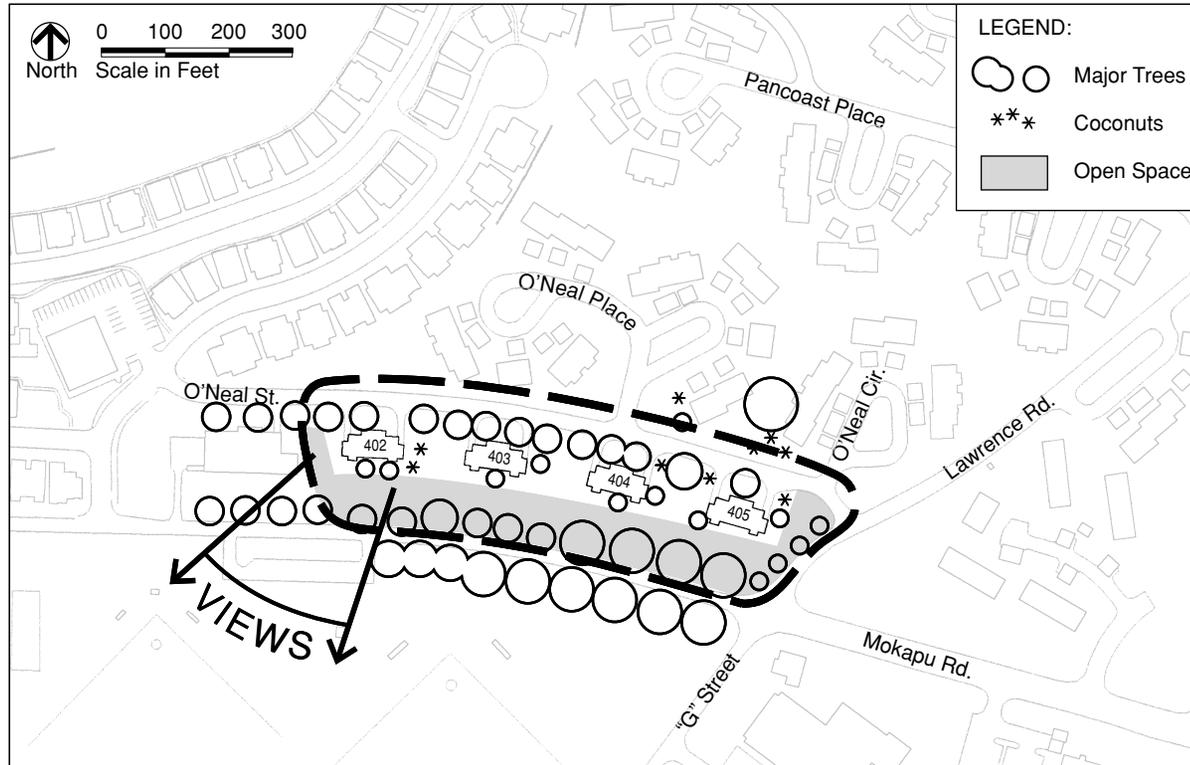
- Pink tecoma
- Plumeria
- Christmas berry
- Coconut



Landscape at Married Enlisted Men's Quarters neighborhood
Source: Belt Collins



Landscape at Hilltop Officers' Family Housing neighborhood
Source: Belt Collins



The Hilltop Officers' Quarters neighborhood sits on a hill just above the Married Enlisted Men's Quarters. The housing is laid out along a semi-circular road with the Commanding Officer's house at the predominant point of the road. Because of the neighborhood's location on the hilltop, all of the homes are exposed to strong trade winds and salt spray from the ocean. In this type of environment, not too many plant species can survive, so there is a lack of substantial planting in this neighborhood. Homes on the northeastern side of the hilltop receive the most exposure; subsequently, fewer plants are found here, and existing trees are a little smaller and wind blown. The northwestern side of the hilltop steps down and is more protected, so the plants tend to be larger and less affected by the wind.

Due to the exposure of salt spray and wind, there is little to no foundation planting around each of the buildings. There are also no street trees. The location and the lack of landscaping is probably what unifies this neighborhood, characterized as a large open space on a hilltop that affords views from Mokapu to the Koolau Mountain Range and across Kaneohe Bay to Kualoa.

Married Enlisted Men's Quarters neighborhood landscape

7-8

Kaneohe Bay Housing Designs

There are three different historic residential designs in two different areas of the installation. The Commanding Officer's Quarters, the Senior Officers' Quarters Design, and the Married Enlisted Men's Duplex Design. The first two housing types are in the Hilltop area of the base, while the Married Enlisted Men's duplexes are on the other side of Puu Hawaii Loa, in a row along O'Neal Street.

Buildings 511–534 were constructed as officers' family housing in 1941. Known as Hilltop Officers' Family Housing, the neighborhood is located on the north side of Puu Hawaii Loa with expansive views in all directions. The houses are sited along two connected street loops, with the Commanding Officer's Quarters set back on a small semi-circular drive at the highest point in the neighborhood. Every Commanding Officer of the base has lived in this house (Facility 511). The Officers' Club and the Bachelor Officers' Quarters, also built in 1941, are adjacent to the officers' houses. In about 1943, Battery French, or Battery 301, was constructed on the north side of the Commanding Officer's Quarters. The battery was camouflaged to appear as part of the housing complex, including dummy roofs to hide the guns.

Another group of houses was built during WWII on the southeast side of the hill for enlisted men. Of this group, only the 1941 married enlisted quarters remain. These duplexes, sited along O'Neal Street, are now called Non-Commissioned Officers' (NCO) Row. At one end of the row is another 1941 building that is now used for offices. It was converted to a Credit Union from a Chief Petty



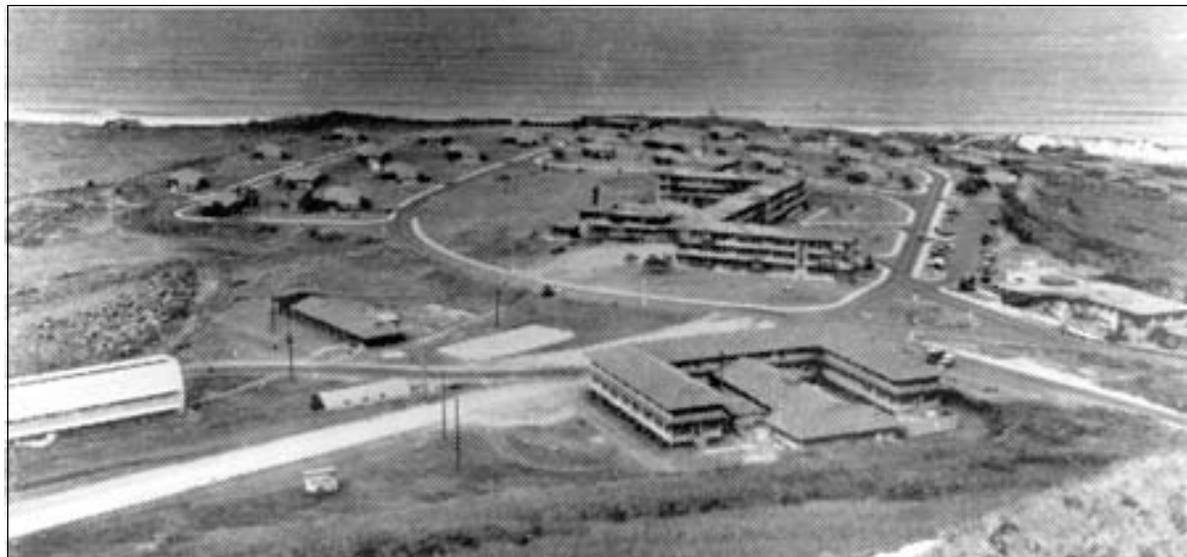
Hilltop Officers' Family Housing neighborhood landscape

Major Trees/Palms

- Monkeypod
- Banyan
- Wiliwili
- Norfolk Island pine
- Coconut

Other Trees/Palms

- Pink tecoma
- Plumeria
- Christmas berry
- Areca palm



7-10 *Hilltop Officers' Quarters neighborhood, c. 1942*
Source: Marine Corps Air Station Kaneohe, AV Center

Officers' Club in 1961. It may have originally been a residential building. The rest of the enlisted housing area was north of the duplexes, located along three parallel streets, but all of that housing was demolished in mid-1951. In 1973, a housing development with a curvilinear street pattern was built on the site of the WWII enlisted houses.

All three historic housing types were designed and built concurrently. Their styles and details are basically identical with the exception of the Commanding Officer's Quarters, which has slightly more detailing and different massing. They all originally included plywood walls, canec ceilings, and similar windows, doors, and hardware.

Commanding Officer's Quarters (Facility 511)

The original drawings for the Commanding Officer's Quarters were prepared in December 1940. The names in the "Drawn By" box are G.J. Wimberly and H. Godfrey. George J. "Pete" Wimberly started an architectural design firm after WWII that became famous, especially for its hotel designs, and is now known as Wimberly, Allison, Tong & Goo.

A few elements of the design are similar to those seen in the Makalapa housing area at Pearl Harbor and the houses at the Navy's radio station in Wahiawa now known as NCTAMS PAC; both of those housing areas were designed by C.W. Dickey & Associates. These elements include: first-floor walls of concrete masonry and second-floor walls of drop siding, similar masonry grille patterns over the first-floor front bathrooms, and "clipped" ceilings on the second floor. It is possible that this house, as well as the Makalapa and NCTAMS PAC houses, were all based on Bureau of Yards and Docks or Fourteenth Naval District Public Works Department standard drawings, or that Wimberly's design was influenced by the slightly earlier Dickey houses for the Navy.

The Commanding Officer's Quarters is a two-story structure built with concrete block walls on the first floor and wood stud walls on the second floor. Originally the concrete block was exposed on the exterior of the first floor, with redwood siding on the second floor exterior. A historic photograph and drawings show that the second-floor walls were

Facility #	Facility or Design Name	Date
511	Hilltop Officer's Family Housing Commanding Officers' Quarters	1941
512-534	Hilltop Officers' Family Housing Senior Officers's Quarters	1941
402-405	NCO Row Married Enlisted Men's Quarters	1941



Front view of Commanding Officer's Quarters (Facility 511)
 Source: Mason Architects, Inc.



Rear view of Commanding Officer's Quarters (Facility 511)
 Source: Mason Architects, Inc.

built with mostly 10-inch redwood drop (horizontal) siding, but that sections of the second-floor walls, between some of the window groupings, consisted of 10-inch vertical tongue-and-groove V-joint boards. However, today the entire exterior is covered with horizontal vinyl siding.

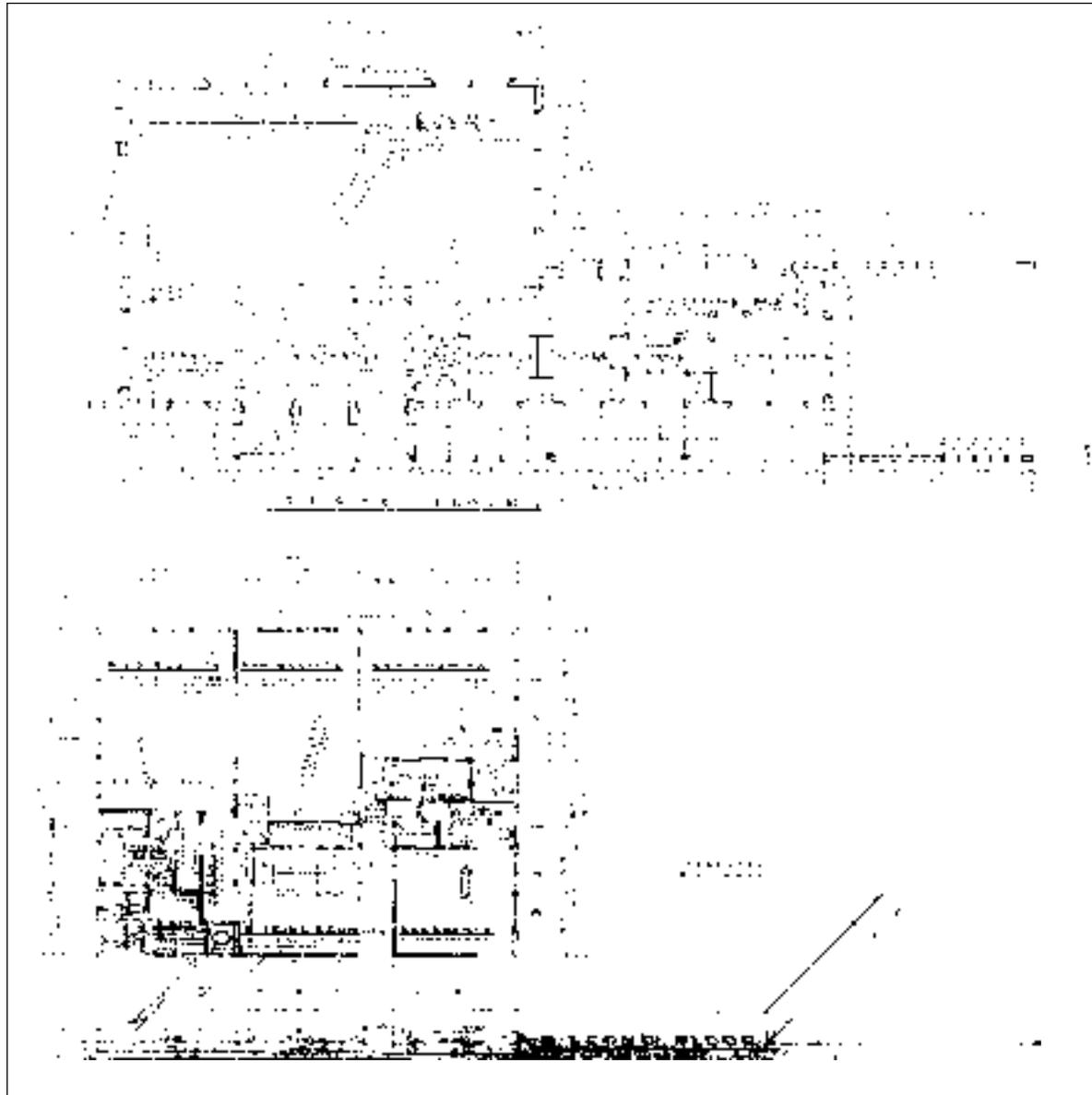
The most distinctive ornamentation in the design is the use of a square grid, trellis-like pattern in several locations. The most prominent use is in the garage walls. It is also used in the stair and second-floor landing railings. The grid was used on top of the original lanai wall but removed when the lanai was enclosed.

The first floor has a formal entrance that includes the stair to the second floor. Directly off the entrance is a small library. The living room and dining room are on the north side of the first floor with views toward the water. The utility portion of the house extends to the side in the original one-story section which includes a powder room, kitchen, pantry, utility porch, storage room, and what was originally a maid's room with a full bath. The second floor includes a sitting room at the top of the stairs, four bedrooms, and two full baths.

The original lanai on the side of the living room has since been enclosed and has a shed roof.



Original stair rail, Facility 511
 Source: Mason Architects, Inc.



Now there is a large open lanai at the rear, or south, side of the house that is screened by a plexiglass wall with a masonry base.

CHARACTER-DEFINING FEATURES OF FACILITY 511

Exterior Features:

- Two-story house with one-story wing.
- Concrete slab foundation.
- Two-level hip roof, with lower roof extended as pent roof over walkway to entry.
- Wide eaves with exposed rafters.
- Rafter ends covered by fascia.
- Nearly level window hood over first-floor windows on rear and side of two-story block.
- Double-hung one-over-one-light wood windows.
- Paired two-light casement windows in entry hall.
- Raised planter next to front entry door.
- Front entry framed by projecting concrete blocks.
- Grids in garage walls, formerly open, now with glass.

Interior Features:

- Plywood panel walls with predominately horizontal, V-joint pattern, except in kitchen and one living room/dining room wall.
- Plywood panel ceilings, with sloping sections on outer portions of most second-floor rooms.
- Vault-like ceiling of second-floor sitting room with two sloping sections.

Facility 511 floor plans, first floor (above) and second floor (below)

- Recessed lighting fixtures, usually flush with ceiling, but some partially recessed.
- Remaining original single-panel doors.
- Original chrome-finished door knobs and keyholes.
- Other original chromed hardware (powder room door).
- Windows hardware: chrome-finished sash locks and chrome-finished recessed sash pulls.
- Flush doors with small viewing windows.
- Half-round door casing trim.
- Any exposed interior concrete masonry.
- Original bedroom closets with sliding doors and built-in sloped shoe shelf on bottom.
- Tapered wooden pulls on hinged linen closet and closet in passage.



*Original door and hardware, Facility 511
Source: Mason Architects, Inc.*

- Grid-pattern wood railing at stair and at guardrail at upper floor foyer.
- Large living/dining area, with living room two steps lower than rest of first floor.
- Intact second-floor plan, except master bathroom.
- Entry space.
- Book cases in the library and shelves under windows in entry.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Vinyl siding.
- Vinyl paneling of eaves.
- Blue canvas canopy over path to front entry.
- Paint over clear finish of oak grid at top of stair and second-floor hall railings.
- Decorative screen between library window and enclosed lanai.
- Enclosed lanai.
- Garage door.
- Altered openings in living and dining rooms.
- Ceiling air conditioning unit in dining room.
- Modern light fixtures.
- Modern fixtures and appliances in bathrooms and kitchen.

Senior Officers' Quarters Design (Facilities 512–528 and 530–534)

The houses for senior officers are one-story concrete block structures with complex hip roofs. Originally, the concrete block was exposed on the exterior but has since been covered with vinyl siding. This new exterior material has greatly changed the appearance of the neighborhood.

The siting of the houses is unusual, with many of them having the main entrance on the side away from the road. This allows the living room to have a view of either open space surrounding the neighborhood or of the open space within the loop of the roads. All but one of the houses have a common north axis orientation, but since the roads are curvilinear, this gives a varied aspect to the neighborhood. Variety is also added because some of the houses are built with reversed plans. A comparison of historic maps indicates that Facility 529 was removed between 1946 and 1951.

The plan of these houses includes a bedroom area at one side and a utility area on the opposite side. At the center of the house, the front entrance opens directly into the living room, which continues into the dining room at the rear of the house. The bedroom side of the house includes three bedrooms and two full baths. The utility side includes the kitchen, pantry, service porch, and what was originally a maid's room with a full bath. The enclosed carport of each house is apparently used more often for storage than as a garage. The interior character-defining features listed may not be complete, or not all may be found in each house of this type, since only the interior of Facility 512 was inspected.



7-14

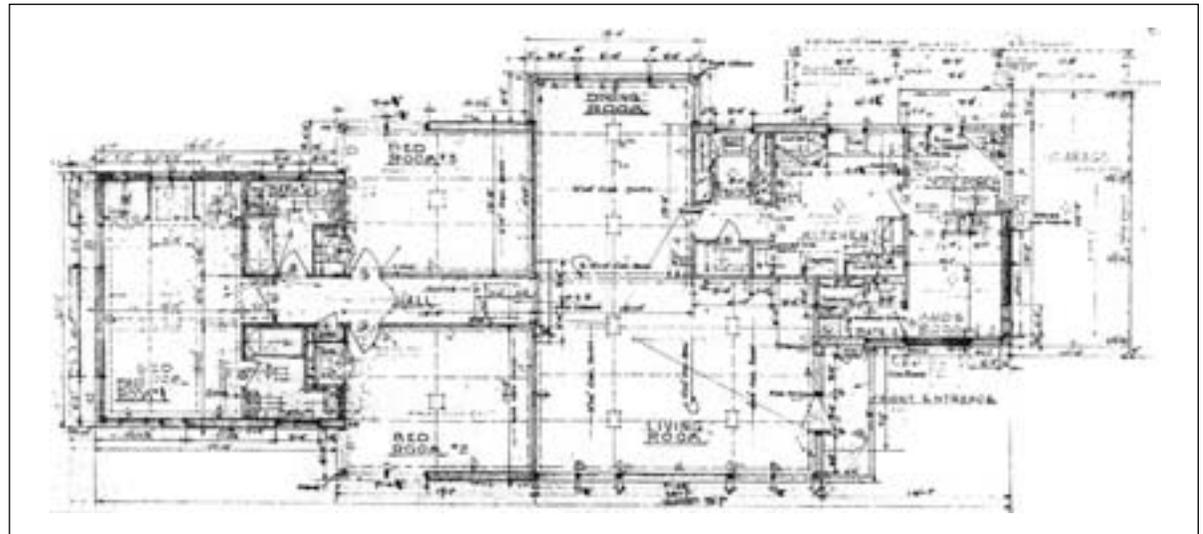
Front view, Senior Officers' Quarters (Facility 512)
Source: Mason Architects, Inc.

CHARACTER-DEFINING FEATURES OF SENIOR OFFICERS' QUARTERS

Exterior Features:

- One-story house on concrete slab foundation.
- Concrete block structure with pipe column supports within wood window framing.
- Complex hip roof with shed roof extension over former carport.
- Fixed and double-hung windows: large double-hung with three-over-three lights and smaller double-hung with two-over-two lights.
- Most rooms with double-hung windows meeting at one corner (two corners of dining room).

Facilities 513 and 515 have both been modified from the original plan. Facility 513 simply has an addition on the front that extends the living room space. Facility 515, however, has been modified more extensively. Most of the additional space was added around the existing plan, which remains somewhat intact in the center of the house. At the front the living room has been extended out, and a new entry has been added along with a covered lanai and additional bedroom. A third full bathroom and hallway space consume the original third bedroom of the house and a new bedroom extends off the side, bringing the total number of bedrooms to four. Also, the dining room was extended toward the rear of the house.



Senior Officers' Quarters floor plan

- Front entrance porch with curved steps and two square planters.
- Front entry door.

Interior Features:

- Plywood panel walls with predominantly horizontal V-joint pattern.
- Canec ceilings with V-joint panels.
- Quarter-round moldings at ceiling/wall intersections.
- *Ohia* steps with natural finish between living room and hall to bedrooms.
- Rounded casing trim at all door openings.
- Two-panel doors typical.
- Doors with nine lights over lower panel (in former maid's room and from kitchen to former service porch).



Original kitchen cabinets, Facility 512
 Source: Mason Architects, Inc.



Original grooved plywood walls and canec ceiling, Facility 512
 Source: Mason Architects, Inc.

- Single-panel door to maid's bathroom.
- Cabinets with sliding glass doors on wood tracks in kitchen.
- Original door knobs with chrome finish.
- Small sash pulls, two per window (now rusted).

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Vinyl siding.
- Vinyl paneling under all eaves.
- Water heater closet and carport enclosure (minor).
- Modern doorknobs.
- Replacement of historic light fixtures.

Married Enlisted Men's Quarters Duplex Design (Facilities 402–405)

Facilities 402–405 are one-story, concrete block duplexes with hip roofs. Originally, the concrete block was exposed on the exterior but has since been covered with vinyl siding. These duplexes are separated by newer housing areas from the remaining WWII housing on the base.

The plan is completely symmetrical, containing two mirror-image living units. The entrance to each unit is to the side of the front projection of the building and leads directly into the living room. Toward the rear of each unit is the dining room, with the kitchen in the back corner. The two bedrooms and one bathroom in each unit are aligned along the party wall.

7-16

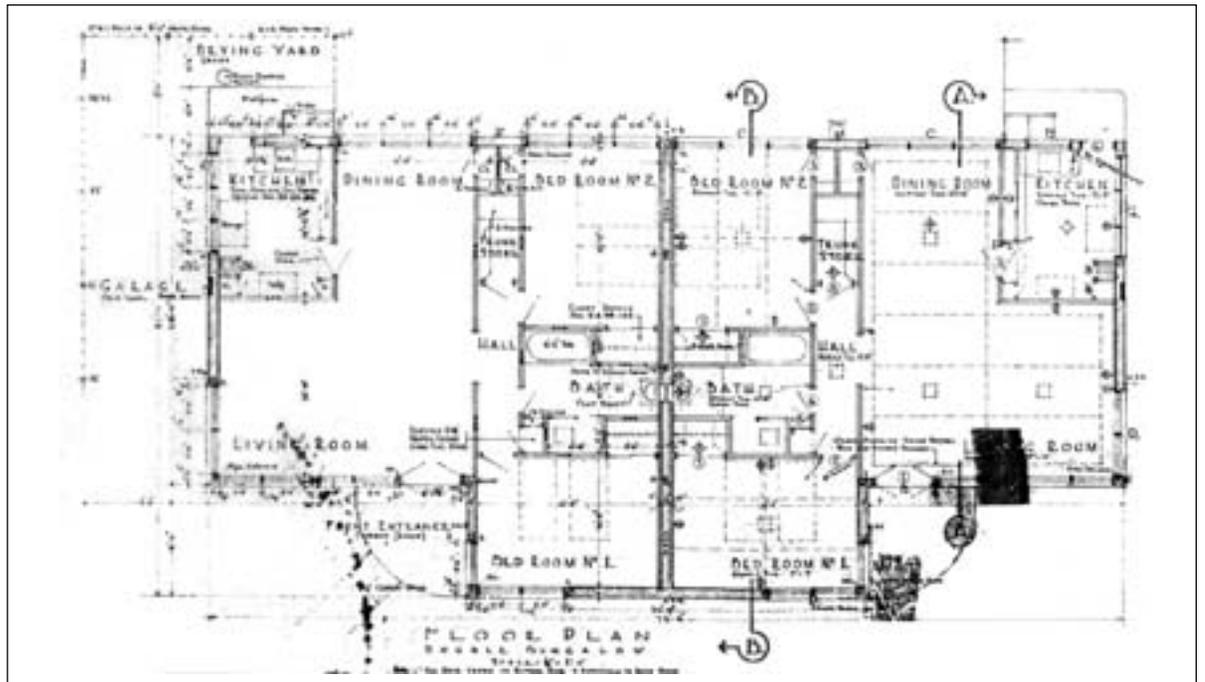
CHARACTER-DEFINING FEATURES OF DUPLEX DESIGN

Exterior Features:

- Hip roof forms with hipped ventilation dormer.
- One-story duplex on concrete slab foundation.
- Double-hung windows (either three-over-three horizontal lights or two-over-two horizontal lights)
- Wood-framed window screens with middle divider.
- Shed roof extensions for open-sided carports.



Married Enlisted Men's Quarters (Facility 402)
Source: Mason Architects, Inc.



Married Enlisted Men's Quarters Duplex floor plan

Interior Features:

- Plywood panel walls with predominantly horizontal V-joint pattern.
- Wood base (about one inch by four inches) with rounded edge.
- Canec panel ceilings.
- Quarter-round moldings at ceiling cornice (3/4 inch) and at inside corners of walls (1/2 inch).
- Half-round casing trim at doors.
- Single-panel doors with original, chrome-finished doorknobs.
- Two-panel door to bathroom, with louvered bottom panel, and original, chrome-finished hardware.
- Partition at toilet stall.

ELEMENTS THAT DETRACT FROM HISTORIC CHARACTER

- Vinyl siding.
- Vinyl paneling under eaves and under carport roof.
- New single door with small infill panels of scored plywood on each side (replacing original double front doors).



*Hallway with original door and casing, Facility 402
Source: Mason Architects, Inc.*



*Original toilet partition, Facility 402
Source: Mason Architects, Inc.*

Chapter 8

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