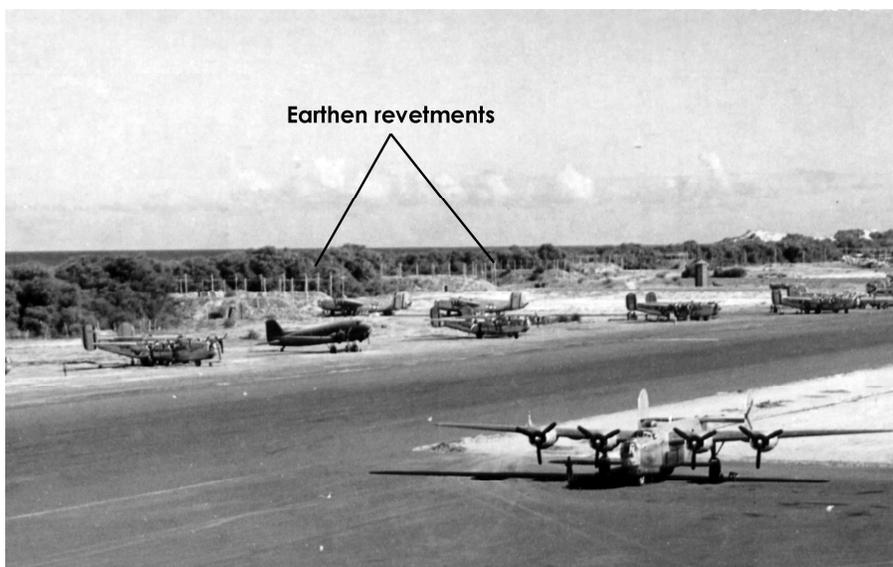


*Engineering Record* (HABS/HAER). Another site is found at Kahuku, location of the ex-Kahuku Army Air Base (AAB), and one emplacement at the ex-Bellows AAB was also inspected by the writer.

The AW emplacements situated at the former Kualoa AAF typically included four basic concrete structures: one large rectangular three-walled emplacement that accommodated a 37 or 40 mm AW with a smaller compartment at either side of the rear of the emplacement that held a mechanical gun director; one concrete three walled, thick flat roofed structure that held a portable generator which supplied electrical power to both the AW and gun director; one windowless concrete ammunition storage building equipped with one steel plated reinforced door, in several examples another door was located on the opposite wall; and one smaller rectangular three-walled emplacement for a .50 caliber AAMG.<sup>12</sup>

The HABS/HAER photographs taken of the ex-NASBP AW emplacements portrayed structures as mentioned above with the exception of one ARMCO corrugated metal building used as a storage magazine at one AW emplacement, and the absence of concrete ammunition storage buildings. Additional examples of AW emplacements are located at Naval Station Pearl Harbor and at the former air base at Kahuku.

**Site Nos. 50-30-05-2032, -2033, -2034, -2036, -2037, -2038, -2039, -2040:** Revetments, built in 1942. Lack of adequate description of the revetments prevents any specific comment by the writer, although earthen revetments are suspected to have been constructed, see photograph below.



Photograph depicts horseshoe shaped earthen revetments at Barking Sands AAB. Original photo was taken sometime between June 15 to September 30, 1944, and has been cropped by the author. Aircraft are B-24s of the 494th Bombardment Group. (Photo archived at NARA, courtesy of foot note<sup>13</sup>)

### General Comment:

Construction of revetments at military airfields was carried out under the supervision of the Honolulu District Engineer, Army Corps of Engineers. On May 5, 1941, Lt. Col. Theodore Wyman, Jr., District Engineer, set up a supervising authority for all military engineering projects on the Island of Kaua'i known as "Field Area No. 4."

On December 7, 1941, all engineer units in the Army's Hawaiian Department were placed under the command of Col. Albert K.B. Lyman, Department Engineer. By July 1, 1943, Field Area No. 4 was discontinued.<sup>13</sup>

Revetments provided minimal protection of aircraft and ground crews from strafing, aerial or sea bombardment by enemy forces. Revetments at WWII military airfields on O'ahu were typically horseshoe

shaped, and constructed of different types of material that included: reinforced concrete, pierced steel planking (Marston Mat) revetted with earth, and earth sprayed with a mix of cement, sand and water known as gunite to preserve the integrity of the slopes.



Arrow points to earthen revetment at Dillingham Airfield, former Mokuleia AAF, one of a number at the location. (Photo by author)



The above pictured revetment was built of reinforced concrete, one of two extant at Dillingham Airfield from WWII. Note the various compartments. (Photo by author)

**Facs. 1 through 10:** Kamokala Munitions Tunnels.

The series of ten tunnels dug into Kamokala Ridge for storage of bombs and other munitions are typical of countless other tunnels built on O'ahu. Munitions storage tunnels are found at Aliamanu Crater, Kipapa Gulch, and at two craters: Leahi (Diamond Head) and Ulupa'u on the Mōkapu Peninsula. Richardson reported that 35 were built on Kauai that measured 12 x 15 ft.; 6 at Bellows AAB; 2 at Wheeler AAF, and 18 at Schofield Barracks.<sup>14</sup>



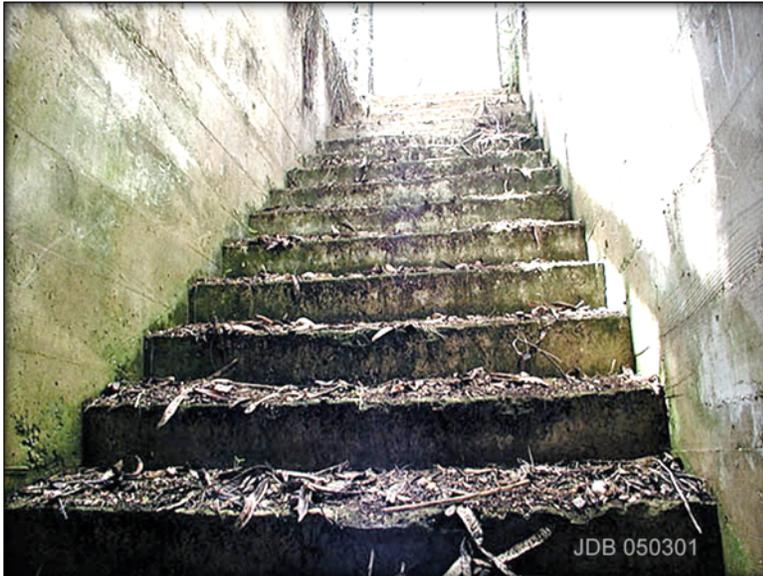
Portal of Tunnel "M2" on the east exterior slope of Leahi Crater (Diamond Head) at the former Fort Ruger Military Reservation. Exterior has been sprayed with guniting and camouflage paint applied. (Photo by author)

**Fac. 284:** Tel Ex Building.**Comment:**

Telephone exchanges were an integral component of military bases and airfields, two types of landline communications networks were in place, tactical and post, routed through the Telephone Exchange, which included several commercial lines. Military communication cables were installed by Army Signal Corps personnel.

Fac. 284 was built in the "cut and cover" method, the concrete sewer pipe ventilator atop the buried roof was commonly used at other underground military buildings, probably one of the few construction materials available in the early months of 1942 when construction materials were in short supply. When the need arose for a smaller sized ventilator, they were fabricated with smaller diameter concrete or metal pipes.

The majority of the underground CPs included an escape shaft enclosed by a small housing located at one corner of the rear wall, with a metal plate door. Ingress/egress via the shaft was accomplished by ladder rungs made of rebar that resembled staples that were affixed to the wall. The housing also functioned as a ventilator. In general, telephone exchanges at airfields consisted of one or more terminal and equipment rooms, rest rooms for men and women, and a room for ventilation and decontamination equipment.<sup>15</sup>



Sixteen steps descend to the entrance door of a WWII CP found at Dillingham Airfield. (Photo by author)



Interior of CP at Dillingham Airfield. Interior dimensions were: 21' 0" x 9'8" x 8'0" with walls approximately one foot thick. Note rebar rungs ascend to escape housing at the left rear. (Photo by author)

**Fac. 350 and Fac. No. 4003:** Command Posts.

The floor plan of Fac. 350 shows that it was built with comparable plans to other CPs and coast artillery battery plotting rooms on O'ahu. The writer examined a comparable structure at Dillingham Airfield which dated back to WWII. The floor plan was similar, with the exception that the escape housing was located at the left rear of the structure instead of on center. Same remarks apply to Fac. 4003.



*View towards the top of the of the escape/ventilator shaft of the CP at Dillingham Airfield.  
(Photo by author)*

Other airfield CPs and numbers examined by the writer:

Kualoa Ranch (3): one structure was within proximity of two AW gun emplacement sites at the northwest end of the former airstrip.

Haleiwa at Puaena Point: one example was briefly examined at the ex-Haleiwa AAF. It was built above ground due to its proximity to the coastline and the water table.

Common features of airfield CPs were: double-walled protected entryways, walls at last one foot thick, entrance doors placed at a 90° angle to the concrete stairway, metal plated reinforced entrance doors of ½ to 1/4-inch thickness, elongated interiors furnished with canec paneling on walls or ceilings, a row of incandescent single bulb light fixtures at the center of the ceiling, and an emergency escape housing at one corner of the rear wall with a small concrete housing atop enclosed with a metal plate door of at least 1/4-inch thickness, and one escape housing that also served as a ventilator.

**Fac. No. 3992:** Small Arms/Pyro Mag. (above ground), Radio Room (underground).

**Comment:**

The small arms magazine appears to be of a design repeated at other WWII military installations on O'ahu. Radio room remarks follow:

District Engineer's Work Order No. XD-37.0 was issued to construct a radio room at Barking Sands AAB that called for a 1200 square foot "cut and cover" building furnished with gas locks, gas proof doors, and a collective protector system for purification of bad air in the event of a gas attack by the enemy. The structure was to have been topped with a twelve inch layer of earth.<sup>16</sup>



*Small Arms locker located at the upper reservation of Fort Barrette at Makakilo Gulch, O'ahu similar to Fac. 3992's locker. (Photo by author)*

### **Concluding Remarks**

The writer is not able to remark on the machine gun pillboxes or gun emplacements mentioned in the ICRMP for the PMRF due to lack of descriptions, drawings, or photographs. While seemingly unimportant, these structures played a role in beach, perimeter and antiaircraft defense of the former Barking Sands Army Air Base during critical periods when it was believed by the authorities that another attack or invasion by the armed forces of Imperial Japan was imminent.

The United States victory in the Battle of Midway, which occurred from June 4 to 7, 1942, was a pivotal point in the war, however it was not until sometime in late 1943 that the threat level was lessened beginning with "Operation Galvanic," the invasion of the Tarawa in the Gilbert Islands, November 20 to 23, 1943.

Imperial Japanese Navy submarines remained a viable means by which the enemy could surface and fire harassing rounds at shore targets in the Hawaiian Islands, or land saboteurs or small raiding parties to disrupt lines of communications.

### **Caveat**

Any errors or omissions in this report are the responsibility of the author. All rights reserved.

### Notes

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Footnote. "Black and White and Color Photographs of U.S. Air Force and Predecessor Agencies, Activities, Facilities, and Personnel – World War II." National Archives and Records Administration (NARA), Records Group 342, <http://www.footnote.com>.

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