

U.S. MARINE CORPS BASE HAWAII, KANEOHE BAY,
WAREHOUSE 250, AVIATION STOREHOUSE
(Aviation Storehouse)
C Street between Fifth & Sixth Streets
Kaneohe
Honolulu County
Hawaii

HABS HI-311-H
HI-311-H

HABS

HI-311-H

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

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

HISTORIC AMERICAN BUILDINGS SURVEY

U.S. MARINE CORPS BASE HAWAII, KANEOHE BAY, WAREHOUSE 250, AVIATION STOREHOUSE (U.S. Marine Corps Base Hawaii, Kaneohe Bay, Aviation Storehouse)

HABS No. HI-311-H

- Location:** C Street between Fifth & Sixth Streets
U.S. Marine Corps Base Hawaii
Kaneohe, Honolulu County, Hawaii
- U.S. Geological Survey, Mokapu Pt. HI 1998 quadrangle, 7.5 minute series Universal Transverse Mercator coordinates: 04.628370.2372040
- Present Owner:** The United States Marine Corps
- Present Occupants:** The United States Marine Corps
- Present Use:** Warehouse/ commissary storage
- Significance:** The warehouse was built during the vigorous construction which resulted after the Japanese attack of December 7, 1941. It was a part of the supply system for the aviation operations of the Naval Air Station. The building is a unique design for industrial buildings of the period, an International Style building designed by the noted architect Albert Kahn, with features that reflect the scarcity of building materials during World War II.
- Description:** Warehouse 250 is a single story building with a low slope gable roof and a roof monitor. It is rectangular in plan, with a footprint measuring about 262' x 183' and has a concrete slab floor. The building is divided into thirteen 20' wide bays along its long sides and six, 30' wide bays along its ends. The building's frame is 8" x 8" wide-flange steel columns which support 8" x 18" steel I-beam girders that run the length of the building and transverse alternating wood beams and steel I-beams. These wood beams are about 8" wide x 18" high and the steel I-beams are about 6" wide x 18" high. The longitudinal steel girders are secured to the sides of the columns about 8" from their tops while the transverse wood beams are positioned on the tops of the steel columns and supported with the help of knee braces. The transverse steel beams rest on the longitudinal steel girders at their mid-points. Wood purlins about 6" wide x 10" high span the 20' distance between the transverse wood beams. These purlins rest on the transverse steel beams and support the approximate 5" tongue-and-groove roof sheathing.
- The exterior walls of the building have a section of concrete wall about 3'-6" high which circles the perimeter. Above this wall is a continuous band of fifteen-light metal-frame windows which circles the building.

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Every other fifteen-light window has a six-light pivot-sash window section. The band of windows extends from the top of the concrete section of the exterior walls to the level of the eaves of the long sides of the building (east and west sides). The north and south sides of the building have corrugated metal siding which fills the gables above the level of the windows. Some window lights on the west and south sides are opaque, either replaced with solid panels or painted over.

The eaves on the long sides of the building are about 14'-0" above grade, with the low slope roof rising to about 17'-8" high at the ridge. This roof forms a band at the perimeter of the building, around the centered, raised roof monitor. The monitor is approximately 180' long x 60' wide, and is about 6'-6" higher than its perimeter roof. All four sides of the monitor have a continuous band of metal-frame windows with pivot sections. The north and east sides of the monitor have eight-light windows with four-light pivot sections and the south and west sides of the monitor have nine-light windows with six-light pivot sections. All of the pivot windows in the monitor are fitted with operating levers connected via gears to a shaft that was originally operated by a chain from the warehouse floor to open and close the windows.

Along the long sides of the building, for a distance of about 40' from each of the ends, the eaves overhang about 4'-0". The center 180' sections of the eaves overhang about 11'-0". There are square metal gutters with metal downspouts.

At the areas with the 10' eave overhang, the transverse alternating wood and steel beams are exposed, projecting through the building side walls. The wood beams penetrate the side walls above the tops of the windows and have their undersides tapered slightly for their exposed length, terminating at the eaves with clipped tails. The 6" x 10" wood purlins are secured to the sides of these wood beams with brackets, the top edges of the purlins flush with the top edges of the beams. The purlins rest on top of the exposed transverse steel I-beams. The transverse I-beams penetrate the side walls about 8" lower than the wood beams and each passes through a portion of one of the window lights. This light is filled with a solid panel. The exposed steel I-beams have clipped tails and terminate about 3'-6" from the eaves, supporting the purlins at their ends.

Warehouse 250 has various types of exterior doors. Double and single flush metal doors are found at most human-scale doorways. One doorway on the west side of the building has a six-light over vent panel door. The large-scale doorways (two on the east and two on the west sides) have metal roll-up doors. These doorways also have accordion folding metal security gates which extend from either side of each doorway.

On the interior of Building 250, at the southwest corner, is an original office space that is separated from the rest of the warehouse space by two walls of floor to ceiling metal-frame windows. The windows are arranged in sashes three lights wide by seven lights high. The bottom

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five rows of lights are painted and the east wall of these windows has its top two rows of lights filled with plywood panels. A two-light over single-panel door in the north wall provides access to this office area from the warehouse interior. Building 250 has three other interior office spaces that have been added and are constructed of modular space divider panels. They are each about 8' high with single-light flush wood doors, and are located at the east side, southeast corner, and southwest corner adjacent and connected via an original doorway to the original window-walled office space.

Historical Context: Warehouse 250 was constructed in late 1942 or early 1943. The building appears under construction in an aerial photo taken October 18, 1942. In this view from 6875', the building appears with no roof, and framing members are seen forming a grid pattern on its entire footprint (NARA College Park 1942). In another aerial photograph taken less than three months later, on January 7, 1943, the roof and monitor of the building appear completed (NARA College Park 1943). One of the first maps to show the building is a map "Showing conditions as of June 30, 1943" at the Kaneohe Naval Air Station (NAVFAC 1943). This map shows the building as a completed project (not "under construction" or "authorized" – the other designations for facilities on the map) and lists its use as "aviation storehouse." Building construction at naval bases in Hawaii was curtailed briefly after the Japanese attack of December 7, 1941 as personnel and equipment were utilized for repair and emergency defense measures. Shortly after the attack, the available resources were shifted to accelerated programs of new construction to support the war effort (Bureau of Yards and Docks 1947, 2:122).

The Naval Air Station at Kaneohe arose from a recommendation by the Hepburn Board in 1938 to establish a base for squadrons of seaplanes to support the Pearl Harbor fleet. In August 1939 the first acreage was acquired for the air station and construction was started. By the end of 1941 the air station had about 90 permanent and about 60 temporary buildings on over 1000 acres of land, with a contingent of 440 military personnel.

Warehouse 250 was built by workmen of the consortium, Contractors Pacific Naval Air Base (CPNAB) a group of firms formed in the late 1930s to construct Navy facilities in the Pacific. The building was built before the Navy's Construction Battalions (Seabees) "arrived [at Kaneohe] on April 1, 1943 to replace the contractor's forces and take over further construction" (Bureau of Yards and Docks 1947, 2:139). Warehouse 250 was based on plans prepared by the architectural firm of Albert Kahn, Inc. Drawings dated December, 1939 show the planned building very similar to its constructed form. One difference is that the planned building is shown with its monitor extending along the ridge all the way to the north side instead of being set back from the north wall as constructed (Naval Facilities Engineering Command 1939, drwgs 136617 to 136628). A plot plan from the series of drawings indicates

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that a future extension was planned at this north end of the warehouse. Albert Kahn (1869-1842) was a noted industrial architect of the pre-war period who was renowned for his use of the International Style. His 600-person office in Detroit produced many designs for the military before and during World War II, as well as industrial buildings for auto manufacturers.

In 1943 the building was listed as an aviation storehouse, the only warehouse earmarked for aviation supplies on the Kaneohe Naval Air Station (NAVFAC 1943). At that time there were no other above ground structures within several hundred feet of Warehouse 250. To the southwest, across C Street, were underground gasoline tanks, and to the northwest, Building 372, the parachute loft, was under construction. By August 1945 there were four additional aviation storehouses, called "storehouse, aircraft parts," built in the area surrounding Warehouse 250; Buildings 269, 270, 271, and 367 (NARA San Bruno 1945). These buildings are shown on a map "Showing conditions on June 30, 1946" (NAVFAC 1946).

The wood, steel, and concrete construction of Warehouse 250 reflects the scarcity of building materials during World War II and the decision of the Secretary of the Navy to place restrictions on wartime construction. In November 1942 the Secretary, Frank Knox, gave requirements for the remainder of the war construction program, including

That the proposed construction is of the cheapest temporary character, with structural stability sufficient only to meet the needs of the service which the structure is intended to fulfill during the period of its contemplated war use... proposed construction materials are those which will cause the least interference with the production of war material (Bureau of Yards and Docks 1947, 1:16).

In addition to the material requirements, the Secretary required that new projects must have "a direct and important effect on the conduct of the war" (Bureau of Yards and Docks 1947, 1:16).

Although lumber was on the list of critical military materials at the beginning of the war due to a drop in timber production and increased use of wood construction, steel and steel plate were considered *the* most critical materials. In construction, the use of steel was reserved for trusses in large buildings (Fine and Remington, 525). Wood trusses were substituted for steel in the roof framing of mid-sized buildings. Lumber was seen as a preferred material to use in the construction of military buildings, and military construction adopted measures to conserve wood. Many of these are illustrated in Warehouse 250, such as simpler framing, narrower joists, and the use of concrete instead of wood floors in one story structures such as warehouses. Two of Warehouse 250's most prominent features were also used to conserve lumber; bands of windows and a flat roof (Garner, 48).

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Although the Secretary of the Navy emphasized the construction of temporary structures, Warehouse 250 was built as a permanent building (Bureau of Yards and Docks 1945, 1035). The use of wood, steel, and concrete in its construction and several of its distinctive design features were attempts to balance the need to conserve vital war materials with the requirements of the Naval Air Station for a serviceable warehouse.

The building has had relatively few alterations since it was built. An original location and plot plan drawing dated September 14, 1942 shows that the building's footprint is the same as when it was built (Naval Facilities Engineering Command 1942, drwg OA-N6-468).

In 1997 repair work was carried out on the building. Work was done on the roof of the building to remove vegetation and repair roofing, flashing, gutters, and downspouts where needed. At the same time the monitor windows were re-caulked and damaged glazing replaced in-kind (with wire glass) as needed. The large-scale overhead door at the northwest corner of the building was replaced and the steel ladder to the roof at the south side was added. Also during the 1997 repairs, the additional steel roof beams which protrude through the top of the windows were added. At the areas with 11' eave overhang these beams were routed through some of the top lights and a portion of the wall above the windows. A section of the wall was cut and the lights that were pierced by the beams were removed and the openings filled after the beam was installed (Naval Facilities Engineering Command 1997, drwgs 7924979 through 7924984).

Sources:

ARCHITECTURAL DRAWINGS

Naval Facilities Engineering Command, Plan Files

Drawings for Warehouse 250. 136617 to 136628 dated December 1939, OA-N6-468 dated September 1942, OA-N06-1275 to OA-N06-1281 dated January 1945, 7012124 and 7012211 dated March 1976, 7040763 and 7040767 dated July 1982, 7040832 dated July 1984, 7069970 to 7069999 dated August 1986, 7924978 to 7924996 dated January 1997, 7936704 to 7936710, 7936717, 7936718 dated January 1999. Located at Bldg. 346, Pearl Harbor Naval Base.

Map N1-1-2, "Conditions on March 1, 1956." Located at Bldg. 346, Pearl Harbor Naval Base .

BIBLIOGRAPHY

Bureau of Yards and Docks, U.S. Navy

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

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Public Works of the Navy Data Book: Buildings, NAVDOCKS P-164, Fourteenth Naval District. Washington: Department of the Navy, 1945.

Fine, Lenore and Jesse A. Remington
The Corps of Engineers, Construction in the United States.
Washington D.C.: U.S. Government Printing Office, 1972.

Garner, John S.
World War II Temporary Military Buildings. U.S Army Corps of Engineers, USACERL Technical Report CRC-93/01, 1993.

National Archives and Records Administration, College Park
Photograph # 80-CF-7974-28775-17. October 18, 1942.

Photograph # 80-CF-7974-28779-11. January 7, 1943.

National Archives and Records Administration, San Bruno
Photograph # 181-58-3158. August 26, 1945.

NAVFAC Archives

Map OA-N1-679 of Naval Air Station, Kaneohe, "Showing conditions on June 30, 1943." Port Hueneme, CA: from 14th Naval District Map books. .

Map OA-N1-1511 of Naval Air Station, Kaneohe, "Showing conditions on June 30, 1946." Port Hueneme, CA: from 14th Naval District Map books.

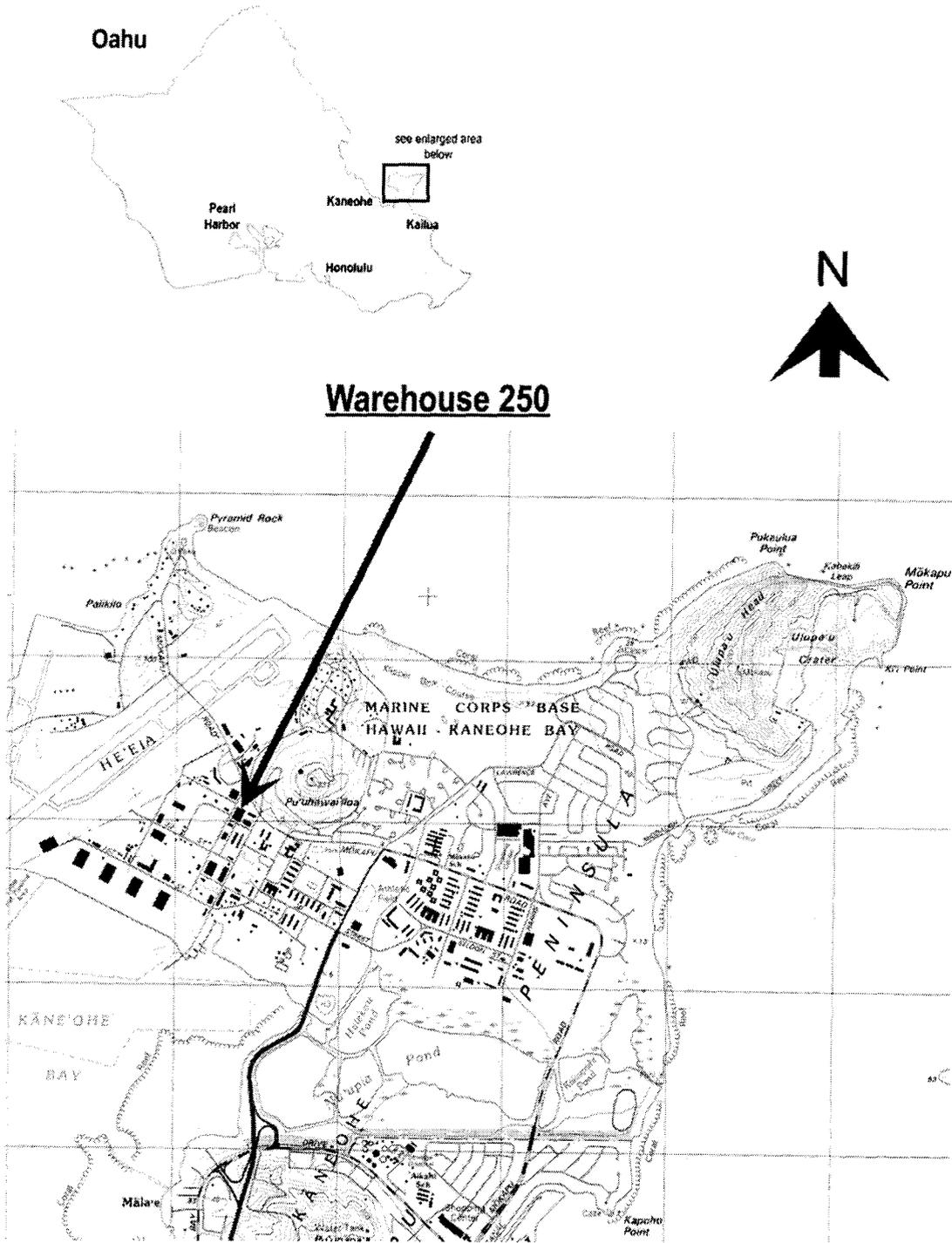
Map OA-N1-1975 of Naval Air Station, Kaneohe, "Showing Conditions on June 30, 1949." Port Hueneme, CA: from 14th Naval District Map books.

Steele, Al
"Myths, Martyrs, and Marines of Mokapu." Photocopy of typescript at Hawaii State Library. 1970.

Project Information: This report was prepared in advance of anticipated renovations or demolition of the buildings. Photographs for this report were taken by David Franzen in May and June, 2006 and the written portions of the report were researched and prepared by Dee Ruzicka of Mason Architects, Inc., Honolulu, Hawaii.

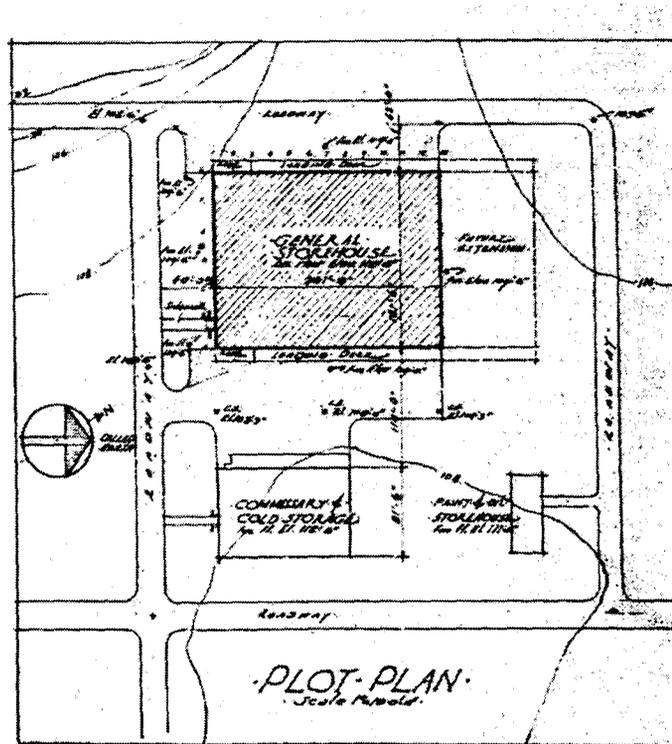
Date of Report: June 2006

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Portion of original Albert Kahn Inc. drawing for Building 250 dated October 19, 1939. Showing the building site and originally planned extension at the north end. From Naval Facilities Engineering Command 1939, drwg 136617.

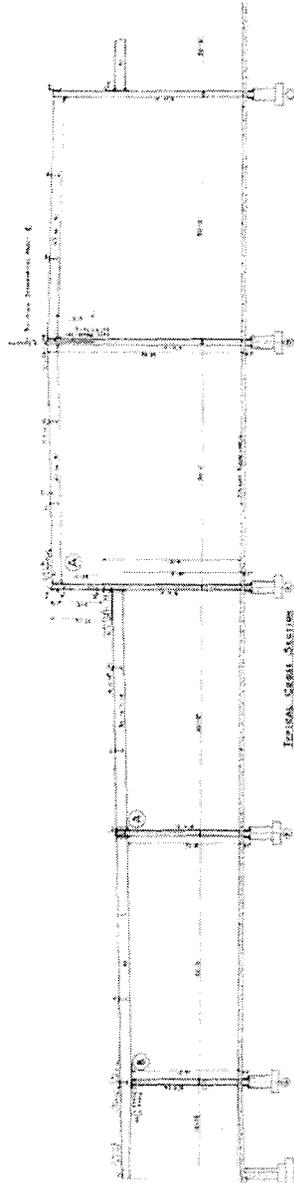


NO. 1	Drawn by	Described in Bulletin No.	BY
Approved	SA	DEPARTMENT	BUREAU OF YARDS & DOCKS
Design Mgr. <i>E.M.</i>	Approved	Dec. 9, 1939	Y. & D. Drawing No.
Design Mgr. <i>C.A.T.</i>	<i>for Bomb</i>		136617
CONTRACT NOy-3550	ALBERT KAHN, INC.	DETROIT, MICH.	
Drawn by <i>M.H. S.K.</i>	U.S. NAVAL AIR STATION		
Checked by <i>M.H.</i>	KANEOHE (OAHU) T.H.		
Sheet 1 of 12	GENERAL STOREHOUSE		
Project No. 1820-G	FOUNDATION PLAN		
Approved	Oct. 19, 1939	ALBERT KAHN, INC.	
1		<i>Albert Kahn</i>	Architect



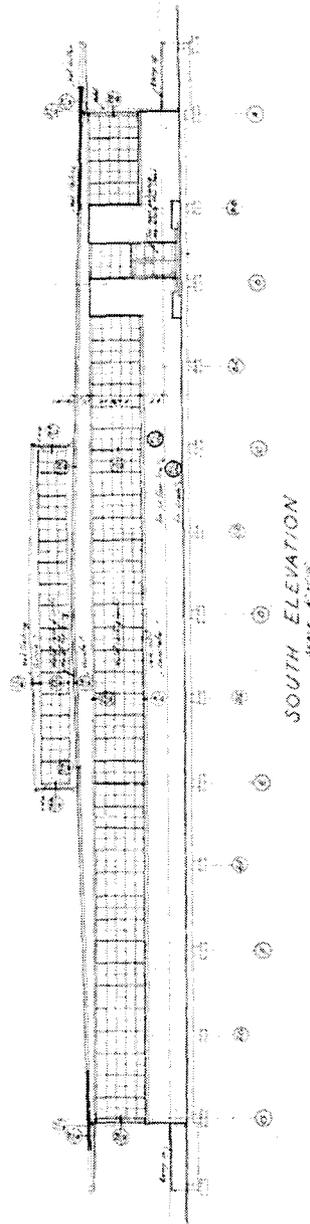
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Portion of original Albert Kahn Inc. drawing dated October 19, 1939 showing the framing of Building 250. From Naval Facilities Engineering Command 1939, drwg 133625.



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Portion of original Albert Kahn Inc. drawing dated October 19, 1939 showing the proposed south elevation of Building 250. From Naval Facilities Engineering Command 1939, drwg 136620.



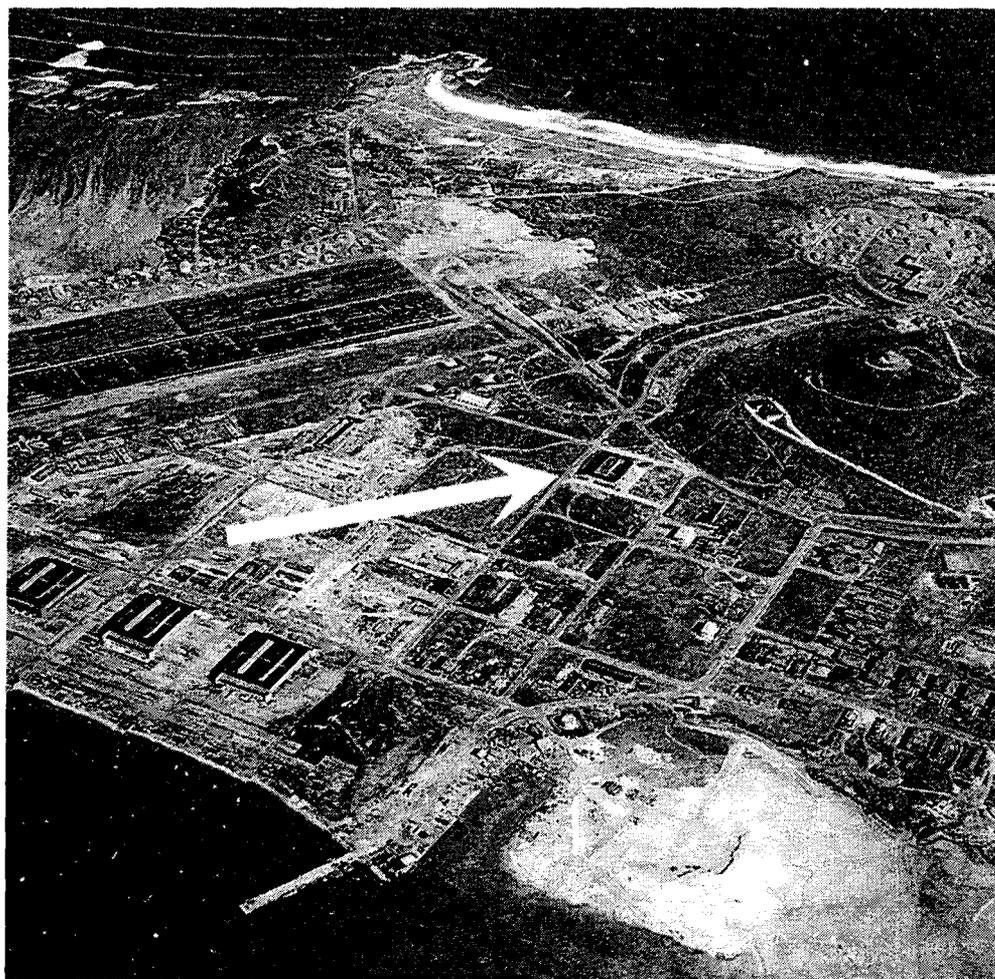
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Portion of aerial photo dated October 18, 1942 showing construction in progress on Building 250 (arrow). From NARA College Park 1942, 80-CF-7974-28775-17.



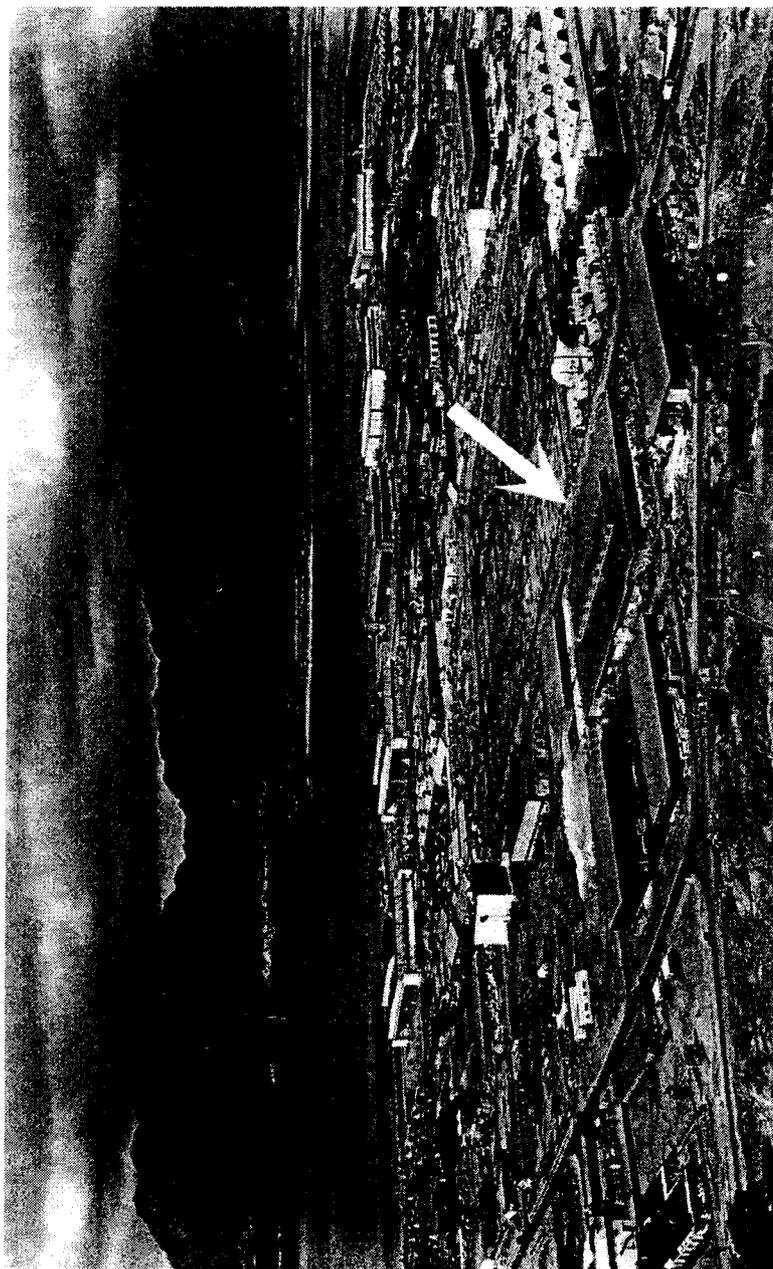
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Portion of aerial photo dated January 7, 1943 showing Building 250 (arrow) with a roof. From NARA College Park 1943, 80-CF-7974-28779-11.



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Portion of aerial photo dated August 1945 showing Building 250 (arrow). The four buildings surrounding Building 250 are; (counterclockwise from top) Building 367, Building 271, Building 270, and Building 269. From NARA San Bruno 1945, 181-58-3158.



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Longitudinal and transverse building sections from 1997 repairs, dated January 31, 1997. From Naval Facilities Engineering Command 1997, drwg 7924962.

